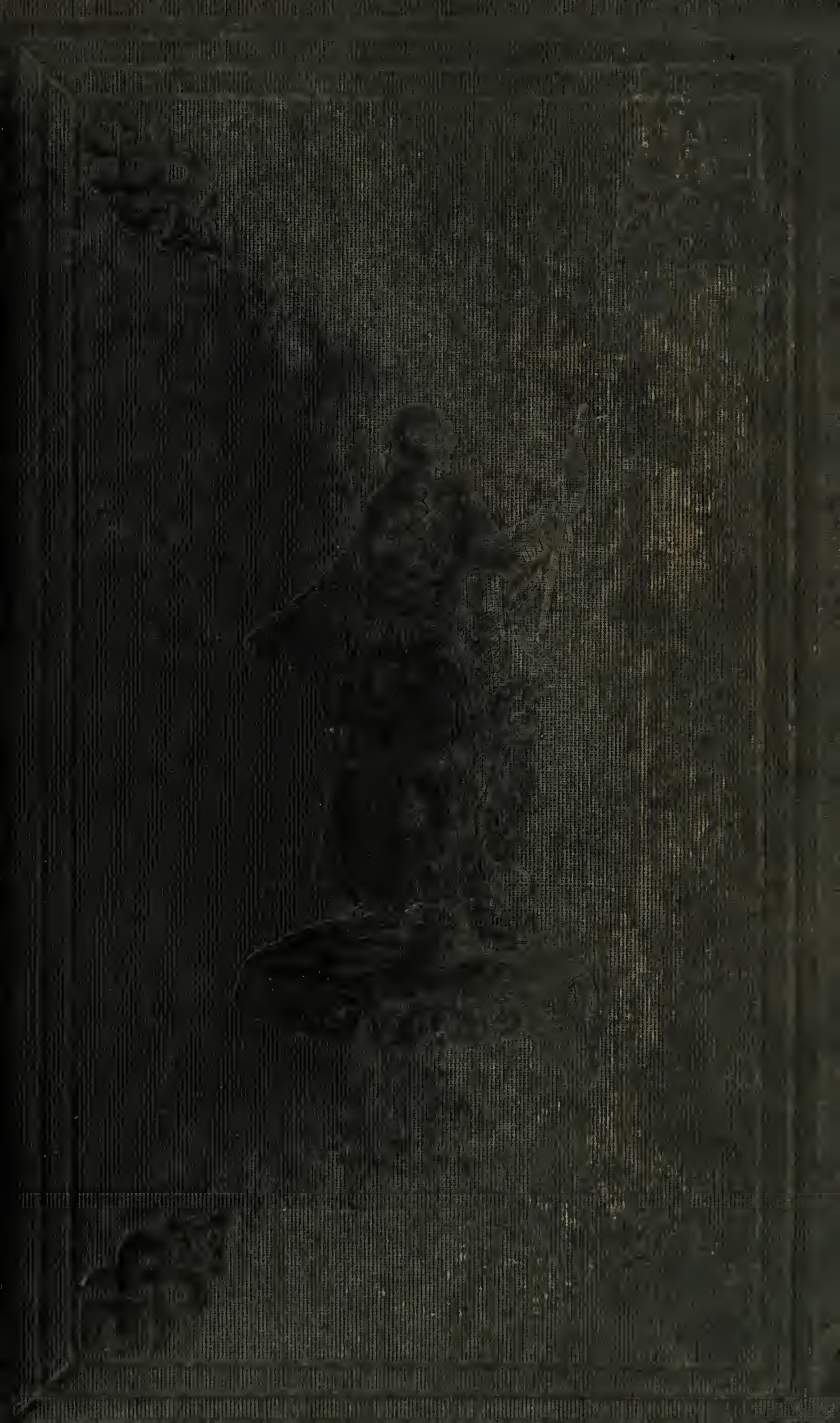

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ABSTRACT OF THE MEDICAL SCIENCES,

&c. &c.

PART I.

PRACTICAL MEDICINE, PATHOLOGY, AND THERAPEUTICS.

SECT. I. ZYMOTIC DISEASES.

ART. 1.—*Contributions to the Pathological Anatomy of Typhus Fever.* By Dr. VIERORDT, of Carlsruhe.

(*Schweizer. Zeitschr.* iii, 3. *Schmidt's Jahr.* 1846. 3, Heft iii.)

THE author of this communication has obtained the following results from the examination of 51 cases of typhus fever:

In the Cranium.—In 19 cases the dura mater was found to be pale in 8; universally or partially injected in 11; the arachnoid was in the majority (26) of instances also considerably injected; almost never pale (once only in 37 cases); generally containing a moderate quantity of serous effusion. The brain itself had, with few exceptions, a natural consistence; the medullary substance was pale in 16 out of 41 cases; in 7 it exhibited slight bloody puncta upon incision; the white and gray substances were in some instances more distinctly separated in colour than in others; the lateral ventricles, in 42 cases, contained no serum 12 times; one drachm only in 2 cases, from two to six drachms in 15; the serum was generally clear and pale. The venous tissue (pia mater?) was in general moderately congested; at the base of the brain no effusion was found in 2 out of 29 cases, from half an ounce to an ounce in 14, from two to five ounces in 12.

The Œsophagus.—In 36 cases in which this part was examined, more or less loss of substance was discovered in 21; the mucous membrane was generally exsanguine, but in a few instances was speckled or entirely suffused with capillary injection. The loss of substance exhibited itself in two forms:—1. That of isolated superficial erosions, of a size varying from that of a millet seed to that of a pea; these did not appear to have

any tendency to attack the deeper structures, neither were the tissues surrounding them materially engorged; these erosions were usually found in those who died from the tenth to the fourteenth day of the fever. 2. As ulcers, which destroyed the cellular tissue of the epiglottis in an uniform manner. These ulcers commenced with a more or less considerable tumefaction of the mucous membrane of the epiglottis (caused by formation of the typhus product?), the borders of which were converted into a friable whitish-yellow mass, which, when removed, displayed an irregular ulceration of from two to three lines long, half a line broad, and one line deep, the bottom of which consisted of pale or slightly red granulations. This ulceration limited itself to one border of the epiglottis, and seldom extended to the mucous membrane of the œsophagus, unless it attacked the subjacent cartilage at the same time. The author observed this form of ulceration in 11 out of 32 cases.

The Larynx was healthy in 24 out of 42 cases; its mucous membrane being pale, or partially injected; in 4 cases slight erosions were found upon the vocal chords, and in 14 more decided ulcerations were seen, but these were in all cases confined to the posterior wall of the larynx. In some few instances the ulcer extended to the cartilages.

Lungs.—These organs were never observed to be perfectly healthy. The principal alterations discovered in them were, a wrinkling and dark-red colour of the bronchial membrane (bronchial catarrh), with œdemic and hypostatic congestion; carnification (7 times), and hepatization (9 times). In 2 cases gangrene of the lungs existed. The adhesions of the pleuræ were mostly of an older date. Effusion into the pleura occurred 30 times; of these the fluid was clear in 6, reddish coloured in 23, and purulent in 1. The quantity was generally less than a pint.

The Heart.—The pericardium itself was healthy in all of 50 cases examined, it was entirely free from effusion 3 times, but in general contained more or less of a transparent reddish-yellow serum. The substance of the heart, and the endocardium, did not present any peculiarities.

Condition of the Blood.—In 49 cases in which the blood was noticed, the heart and large vessels were found empty twice; in 23 cases they contained blood of a watery, and in 18 of a gelatinous dark red character. Coagula of various appearance were also seen; in 9 cases they were soft, and of a dark-red colour, in 10 cases they were more firm, and in 15 they were exceedingly compact and voluminous; in 13 cases these coagula were absent.

The Spleen was notably enlarged in the earlier periods of the disease, its borders more obtuse, its capsule distended, its tissue either firm or more or less friable. Later in the disease, the swelling of the spleen always disappeared, its capsule becoming flaccid, and its tissue recovering its resistance. In 6 cases out of 51 the organ contained metastatic [?] abscesses.

Liver.—This organ presented very considerable alterations. Its volume seldom varied, but its consistence exhibited every grade from induration to complete softening. Its colour was generally yellowish-brown; in some cases congested, in others anæmic. The gall-bladder was found empty in only 2 cases in 30, in the remaining instances it contained, for the most part, about an ounce of limpid bile.

Stomach.—The changes discovered in the stomach were very unimpor-

tant, such as partial injection, ecchymosis, &c., and these appearances were confined to the larger curvature, and were evidently connected with the lesions of the spleen.

Intestinal Canal.—The serous membrane of the upper portion of the small intestines was in general pale, while that of the lower portion, especially in the neighbourhood of the glands, was either injected or covered with large patches of a purple colour. The lower part of the small intestines were sunk into the pelvis, and its serous coat exhibited morbid appearances proportionate to those which existed in its mucous membrane. The *mesenteric glands* presented a series of alterations, consisting partly of simple congestion and tumefaction, partly in the infiltration with a peculiar matter, which was found in various degrees of alteration. This tumefaction was most pronounced in the glands situate nearest the cæcum. The *mucous membrane* of the small intestines was but slightly injected, excepting as we approached the cæcum, where the Peyerian glands were rendered unusually distinct by a ring of injected capillaries. This appearance was more decided in the earlier than in the later periods of the fever. The mucous membrane covering the infiltrated Peyerian glands was in general of an uniformly grayish-red colour, that of the solitary glands being more inclined to yellow; the infiltration was more decided in proportion to the propinquity of the glands to the cæcum. Those glands which were seated in the superior portion of the small intestines were less distinctly marked, and the mucous membrane surrounding them, when held up to the light, exhibited dark spots. Those of the solitary glands which were similarly infiltrated, were of the size of a lentil. The patches of the diseased Peyerian glands were oval, of two or three lines in length, and so placed that their long diameter corresponded with that of the intestine; this, however, was not so constant an appearance, nor so characteristic as is stated by Rokitansky. The number of patches affected was upon the average 6 or 7, of the solitary follicles about 30. Upon these glands were seen a greater or less number of yellowish points; these, together with the superimposed mucous membrane, transformed themselves into a yellowish-brown scab, which, when it was removed, exhibited an *ulcer*. The above-mentioned scab falls off sooner in the solitary glands than in the Peyerian patches, in both of which, however, we have observed that the ulceration proceeds from the centre towards the circumference. The ulcers of the solitary glands are mostly of the size of a lentil, those of the Peyerian are of variable size, round, or oval, and irregular. The nearer these ulcers are to the cæcum the larger and more closely crowded they become, and the greater is their inclination to coalesce. The borders of the ulcers are deep in proportion to the amount of the previous infiltration; in the commencement the edges are well defined, but in the progress of the disease they become attenuated and undermined; they are also dark coloured for the space of a line or two. When the ulceration commences to cicatrize its base becomes pale, and the edges approach the base and unite with it. The part then appears even, and is covered by a thin, smooth pellicle. The spot in which this new structure exists is transparent when the intestine is held to the light, an appearance which has long been considered as indicative of the existence of former typhoid ulceration. *Perforation* of the intestines was found in nearly one seventh of the cases examined, the perforation always

occupied the summit of the ulcer, and allowed the passage of an ordinary sized sound; these were in all cases the results of ulceration of the Peyerian glands, and never of the solitary.

Cæcum and large Intestines.—Morbid appearances were not unfrequently found in this portion of the intestinal canal, but not with the same constancy as in the smaller bowels. They consisted, for the most part, of injection with slight tumefaction of the muciparous glands, small erosions, and typhus infiltration.

The author remarks that the above catalogue of lesions of the various organs of the body in typhus stand in a certain definite relation one to the other. The alteration in the blood crasis takes the precedence of all the other changes, and has an undeniable association with them, as well as with the duration of the disease. There can be no doubt, also, that the chemical constitution of the blood varies much in the different stages of the disease, indeed this is demonstrated by its different physical attributes.

The author deduces the following conclusions from the preceding observations:

1. In the origin of the disease, so long as the intestinal glands are found in the stage of infiltration, the constitution of the blood most nearly approaches to that of health, because the slight increase of fibrin is not fully developed. 2. In the succeeding stages of the disease, that in which ulceration ensues, the blood becomes richer in fibrin. 3. The engorgement of the spleen, one of the most characteristic signs of typhus, is manifestly connected with the infibrinization of the blood; the less fibrin there is, as a general rule, the larger is the spleen. This depends upon the fact that an augmentation in the function of the spleen induces a greater venosity of the blood, which is, in fact, synonymous with a diminution of the fibrin [the author regards the spleen as an organ intended to defibrinize the blood]. 4. The different conditions of the intestinal glands above mentioned, likewise exhibit a close connexion with the state of the blood as regards its proportion of fibrin, as well as with the anatomical changes in other organs, especially of the spleen and mesenteric glands. In the first stage of the intestinal affection the blood is found to be more deficient in fibrin, and the spleen more engorged than in the latter periods of the disease. Further investigations demonstrate that a more or less rapid series of connected alterations likewise mutually affect the Peyerian and solitary follicles.

Art. 2.—*Clinical Lecture on Typhus Fever* (continued). By Dr. Corrigan.

(*Dublin Hospital Gazette*, May 1, 1846.)

[The following extract is taken from the continuation of a lecture, the first part of which appeared in our last volume (vol. III, p. 1). The lecturer having there stated his views of the pathology of fever, now passes in review some of the functional disturbances which supervene during the course of the disease, and add materially to the difficulty of treatment, as well as to the danger. The lesion of the function of the cerebro-spinal system is one of the most important which can arise

during fever, and is manifested by want of natural rest. A patient may die, observes Dr. Corrigan, of this lesion, and may die of this cause alone; if it continue for a few successive nights, delirium and coma are the invariable consequences. Taking this view of the case, the importance of the question—Has the patient slept? becomes apparent.

The treatment of this symptom is thus laid down by the lecturer:]

If we now pass to the question of medical treatment, the first thing to be done will be to have the head shaved; and this of itself is generally sufficient; the application of intense cold is often a serious error; it very often obviates the object you have in view—that of procuring sleep. After this, if you ascertain that the patient has still had no sleep, you will not be doing wrong, I am sure, if you apply four or six leeches to the temples. This is a remedy upon which, for my own part, I place more reliance than almost any other. If, after your patient has passed three or four successive nights without sleep, you apply four leeches to the temples, and you procure for him even half an hour's sleep, you will have done a vast deal towards his recovery. A state of general debility, requiring the exhibition of wine, need by no means prevent your employing this remedy; for while you give wine with a view to the increase of tone of the heart, larger vessels, and capillaries, you are perfectly justified in relieving the distended capillaries of the head by the local abstraction of a small quantity of blood; just as in some forms of ophthalmia, it is often the best practice to employ local bleeding, to relieve the distended capillaries, and tonics, to give them and the general circulation tone. I was myself first led to adopt this practice in reference to procuring sleep, chiefly from having observed that, on the occurrence of epistaxis, sleep supervened, and the patient recovered, although in such cases the general debility had been so great as to have required a free exhibition of wine. You need have no fear of taking this small quantity of blood from the capillaries, for they very soon accommodate themselves to the trifling loss sustained: there is not the risk that might attend even so small an abstraction of blood, taken from a vein. The application of cold to the head is another useful means of obtaining the same object, but it is one which is too often carried to excess. A bladder containing pounded ice is placed on the head, but air is quickly disengaged, the ice lies heavily upon the top or back part of the head, and sometimes causes even sloughing of the integuments. Instead of ice, take a single fold of linen dipped in cold lotion; lay it on the head, and it will generally answer all purposes.

The question might suggest itself here, why, as opium is given in delirium tremens, and in such like diseases—why should it not also be administered here, where obtaining sleep is a matter of such paramount importance? Why not give it for the lesion of the cerebro-spinal function which we are now considering? Because, if opium be given in fever, and if it do not procure sleep, it does mischief of another kind. It will act injuriously upon the nutritive function, including that of secretion and excretion. In analysing the disease before us, we may derive great assistance from comparing some of its lesions in function with symptoms in other diseases. For instance, in delirium tremens, while the tongue and gums secrete their natural quantity of mucus, and the secretion of urine is abundant, you may continue to give opium for the purpose of procuring sleep; but suppose, in the course of the treatment, the tongue

became dry and brown in the centre, the urine high coloured and scanty, and a slight wound or cut, if there happen to be one on any part of the body, becomes dry and everts its edges—in other words, as the nutritive function is passing into a deranged state, then the opium is acting as a poison upon the system, and the continuance of its administration would be fatal. The same considerations are to guide you in the exhibition of opium in fever; if the condition of the skin, of the mucous membrane, and an abundant secretion of urine, indicate a sufficiently active state of the nutritive and secreting function, you may venture on a trial of opium; but if the desired effect be not produced at once, do not attempt to press it; if you do, mischief will surely follow. Hyoscyamus is a remedy which has not an injurious effect upon the functions of nutrition and secretion, but this cannot be said of opium. At the approach of coma you must not, unless there be strong vascular action about the head, persist in leeching, but have recourse to blistering, as a means of rousing the patient from his state of torpor. Here I may observe, that in the ordinary way of applying a cap-blister, as it is called, the blister cannot be made to lie close to the surface: for this reason, I have been in the habit of having the blister cut into strips of an inch in width, laid across the head in a direction from ear to ear, so that no part is left uncovered, and that the strips lie close to the skin. Counter-irritation may also be produced in a few hours, by means of croton oil and ung. hydr. mixed.

[Dr. Corrigan alludes to hurried respiration in fever in these words:]

There is a state of the breathing preceding the approach of coma which you might confound with that of bronchitis, but in which the danger is very different; it becomes exceedingly rapid and laboured, amounting to 40 or 50 respirations in a minute, but the respiratory murmur is audible in the tubes; there is no mechanical obstruction in them; this is what is called cerebral respiration; while in that of bronchitis or catarrh the tubes are filled with mucus, and a mechanical obstruction is thus offered to respiration, from which very few cases recover. You observe, besides, the characteristic lividity of the countenance, while in the cerebral breathing the countenance is pale, natural, or high coloured. The cerebral breathing is a breathing of debility, very similar to that you hear in a person after very violent exercise.

[The lecturer concludes with the following summary of his preceding observations.]

In the analysis we have made of fever, as purely a disease of functions, and these lesions of functions, not symptoms but portions of the disease itself, the treatment is to be adapted not to the circumstance of the fifth, sixth, tenth, or twentieth day of fever, but to meet the state of each particular function, day by day. Take up, in their proper order, as you stand by the bedside—first, the circulating function, made up of the heart, larger vessels, and capillaries; examine the state of these functions; next look to that of nutrition and secretion, as declared by the state of the tongue, gums, urine, and the other symptoms, as I have gone through them; then to the cerebro-spinal system, which we have examined to-day. If you understand clearly the rules I have endeavoured to lay down, you will understand why it is that we may with advantage combine the application of leeches with the administration of wine, and along with the latter the exhibition of mercury; the one to meet the lesion of the circulating

function—the other for the purpose of relieving the derangement of nutritive functions. You also know that mercury may be combined with aqua acetatis ammoniæ, &c., when febrile excitement is to be subdued; and you can perceive the value of blisters and other stimulants as a means of stimulating the function of circulation, or of rousing a patient from the lethargic condition into which he may fall. Thus, if you follow up the rules which in the analysis of fever I have endeavoured to carry out in the short space of three lectures on the subject, you will be able to understand why it is that remedies of an opposite therapeutic tendency may be usefully combined. You can understand, also, that fever is not a disease to be treated by guess-work, but that it has, in fact, on accurate investigation, rules for its treatment as definite as those of any other disease you may have to contend with.

[After describing the various methods in which a crisis may declare itself in fever, and their relative importance, the lecturer thus expresses his opinion with respect to what is called critical perspiration.]

But the crisis most of all to be dreaded in the fever now prevailing, is a crisis by perspiration: for you may almost lay it down as an axiom, that when perspiration sets in on the sixteenth or seventeenth day, there is very great risk of your patient's life. It is very hard to say why it is so, but you must by all means avoid anything that would encourage perspiration. In common inflammatory fever, its occurrence upon the second or third day may be looked for as an advantageous occurrence; but in our present maculated fever it is much to be dreaded, as a circumstance productive of extreme exhaustion and relaxation.

[Somewhat similar opinions are expressed in the following article.]

Art. 3.—*On copious Sweating in Typhus.*—Dr. Henderson, who has endeavoured to ascertain certain important considerations relative to febrile diseases, gives it as his opinion, that copious perspiration in typhus is generally a symptom fraught with danger; and, according to his experience, patients in such cases seldom recover, especially if the sweating is accompanied with quick pulse. "In a very few instances of typhus," he observes, "I have noticed a favorable change coincide with the occurrence of copious perspiration, but never a total cessation of the febrile symptoms. In the great majority of instances, instead of copious perspiration in typhus coinciding with symptoms of amendment, it happens that it ushers in, or accompanies, a state of hopeless prostration, stupor, hurried breathing, and increased frequency of pulse."

Dr. Wardell on the Scotch Epidemic Fever. Medical Gazette, July 24, 1846.

Art. 4.—*On the Observation of critical Days in Fever.*—The mode of observing these, according to Dr. Laycock, in a clinical lecture on the prevailing diarrhœa, and its connexion with typhus, will depend upon the kind of fever. In the exanthematous fevers they are very clearly manifest; if you will read Dr. Craigie's history of smallpox, you will find that the critical days in that fever are the fourth, seventh, eleventh, and fourteenth. In counting the days, you count the day of the first rigor, or febrile paroxysm, as the first day. Fevers, like agues, have varying types. You

are aware that a quotidian in spring, or the beginning of summer, may be a tertian at the beginning of autumn, and a quartan during the winter. In agues the remission of the febrile phenomena is complete: it is an intermission. In a remittent fever the remission is less complete; the symptoms do not disappear quite, but are alleviated only. In a continued fever, like typhus, the remissions are still slighter, and the alleviation of the febrile symptoms still less. Now, in proportion as the remissions are less distinct, careful observation becomes the more necessary, if you would distinguish the critical days. Supposing our typhus fever has a tertian type (which it has at present, but in the autumn it may be a quartan), your patient will become worse on the third, fifth, seventh, ninth, eleventh, thirteenth, and twenty-first days, and he may also be better on these days, for the period of the day on which exacerbation takes place is not the same in all cases, nor on each day in the same person. If the exacerbation be in the morning or at noon, there will be a slight remission towards night. If it have the quartan type, the exacerbation on the critical day will *probably* be between four and twelve o'clock p. m., and then, after twelve o'clock, there will be an improved state of things. In a fever of this type, it has been noticed that the critical days are the *first,* (second, third,) *fourth,* (fifth, sixth,) *seventh,* (eighth, ninth, tenth,) and eleventh. The last series has, you will see, an interval of three clear days. Now I do not know exactly why this happens; it is so, however, and I think it may be explained by the tendency which fevers have to change gradually the hour of periodic exacerbation. Sometimes the hour and accession is an hour or two later at each successive recurrence, sometimes an hour or two earlier, but usually the former. Now in the case of typhus, and other continued fevers, anything like a critical evacuation is not necessary to the cure. The remission may be characterized simply by less heat of the skin, less thirst, less delirium, an hour or two of quiet sleep, a free discharge of urine, or a slight diaphoresis. Or it may be that you simply find that your patient has a feeling of being better.

Medical Gazette.

Art. 5.—*On the Contagious Nature of the Epidemic Cholera.* By Dr. Copland.*

Few questions have been agitated with greater warmth than was that of the contagious or non-contagious nature of the Asiatic cholera, at the time of its appearanee in this country. It is our purpose, in the following abstract, to lay before our readers the conclusions arrived at upon the subject by Dr. Copland, submitting his remarks to some considerable amount of condensation. Those of our readers who wish to peruse the article *in extenso,* are referred to Part 10 of the 'Dictionary of Practical Medicine.'

Dr. Copland states his full belief that epidemic cholera is infectious in the same manner as scarlet or typhus fever; that is, "not by contact, but by inhalation into the lungs along with the air, of the morbid effluvium given out from the body or bodies of the affected." He observes, that the mere contact in the above diseases will not communicate them even to the predisposed, while the breathing the air contami-

* Dictionary, Part 10.

nated by their emanations will often do so; and such is likewise, he believes, the case with cholera. Some stress was laid upon the non-inoculability of cholera as tried by Foy and others at Warsaw; but this is shown by the author to be a fallacious ground of argument, as neither measles, nor scarlet fever, nor typhus fever, can be so communicated. With these introductory remarks he proceeds to notice the chief arguments used by the non-contagionists. These are as follow:

1. They contend, that having sufficient proof that cholera has not hitherto proved contagious, either in warm or temperate climates, why should it change its nature and become infectious at the present time? The answer is, that it is admitted that the common cholera, whether of the ordinary bilious kind, or the more severe form of the disease met with in hot climates under the name of *mort du chien*, is not infectious; but this can be no reason why the pestilence in question, which is distinct from cholera, and possessing characters among which cholera is the least important, should not present this feature.

2. They contend, that if this malady were infectious, a greater number of those in communication with the sick would be attacked, and because so many so exposed escape, therefore the disease is not infectious. In this respect, however, of the escape of a large proportion of those exposed to the infection, this pestilence resembles all other known infectious diseases, even the most virulent.

3. They contend, that numerous instances of true pestilential cholera have occurred which could not be traced to communication, direct or indirect, with affected persons. This may be the case in a few instances, but how difficult it is to prove mediate infection, that which takes place through the medium of *fomites;* and on how many occasions are persons liable to be affected by an infectious principle, without being able to account for the manner in which this took place. Infectious diseases may declare themselves immediately after the impression of the exciting cause, or not until after many days, or even weeks, according to the state of predisposition, during which interval latent changes are going on in the frame; how, therefore, in so indefinite a period of interval between exposure to the cause and the development of a disease, can all those attacked refer to the particular occasion on which they were exposed to infection?

4. Anti-contagionists refer to the occurrence of epizootics in proof of a noxious emanation from the earth, which, floating in the air, affects both man and beast, and occasions this pestilence. It is granted that these emanations do arise from the soil, and that such may be a concurrent cause of the pestilence so far as to increase the predisposition to infection, and the fatal tendency of the disease. But from a careful review of the instances in which epizootics have accompanied cholera, Dr. Copland is able to state that they have been few, and merely coincidences, by no means affecting the question at issue.

5. Another circumstance insisted upon by the non-infectionists is, that a great number of those who have observed and treated the disease have espoused their side of the question. To this Dr. Copland replies, that many of those who witnessed the disease in India have not, in reality, had the large experience attributed to them; moreover, the opinion of a number of individuals, based upon their own limited expe-

rienee alone, cannot be so trustworthy as that of competent persons who weigh, compile, and digest the accumulated facts of others, comparing the whole evidence, personal as well as testimonial, with minds uninfluenced by preconceived ideas.

6. The non-infectionists also argue, that if the disease had been infectious, its propagation would have been prevented by the measures resorted to. To this Dr. Copland urges, that the disease, during its prevalence in the East, was never expected to be confined by sanatory measures, and that it was not until it had reached Astrachan that any such measures were attempted, and then but imperfectly, and yet these succeeded for eight years in preventing the entrance of the disease into the place. Where rigorous quarantine has been adopted the measure has succeeded.

[Turning from these objections, the author proceeds to investigate the validity of the causes which the non-infectionists substitute for the infectious principle. Of these, the principal is a certain epidemic constitution or condition of the atmosphere. "But," says Dr. Copland—]

"Grant this to exist, how would it explain the progress of the pestilence? The air is a mobile fluid, sweeping along at the rate of eighteen miles an hour, in currents both vertical and horizontal. But the disease has not been propagated in the course of prevailing winds, or with the rapidity which such a source would suggest; it has advanced slowly, and at the rate at which human intercourse takes place, in the channels of such intercourse, and in quarters where such intercourse has occurred. It has usually spread in a town, visited prisons and sequestered places last, but affected them severely when introduced, entirely avoiding those entirely placed apart from the rest of the community.

"If the constitution of the air were the cause, how came isolated places, in the midst of infected towns, to escape? How could the disease be barricaded out of certain towns in Russia? How could it travel along one side of a river, the side of public intercourse, and never appear on the opposite bank, or if it did, limiting itself to the spot affected? When introduced into a country, why should it break out in seaports holding intercourse with affected places? How came the disease never to appear in any place without previous intercourse with an infected part, if it arose from a general diffusion of the poison in the atmosphere?

"Others impute the pestilence to the exhalation from the earth of some peculiar miasm: against this the same arguments suffice."

[The author concludes, therefore—]

"That the distemper was caused by infection; that it was not propagated by immediate or mediate contact, or by any palpable virus or matter, but by an effluvium emanating from the body of the infected, and which was often manifest to the sense of smell; which attached itself to the body and bedclothes, and remained so attached for lengthened periods, if these clothes were shut up in confined places. The disease was thus propagated in numerous instances.

"Placing the hand upon the surface of a person in the blue stage of the disease was often followed by an unpleasant tingling in the course of the nerves.

"When the poisoned air was breathed for the first time, a morbid impression was made upon the chest and epigastrium. This impression was diminished upon subsequent exposures.

"There is no evidence to account for the primary generation of the choleric poison."

SECT. II. DISEASES OF THE NERVOUS SYSTEM.

ART. 6.—*Observations on the Treatment of Apoplexy and Hemiplegia.* By Dr. GEORGE BURROWS.*

[The following remarks are the substance of the fifth section of the author's recent work on the 'Disorders of the Cerebral Circulation,' a more general notice of which will be found in the 'Report on Practical Medicine' in the present volume. With respect to the remedies to be employed during the fit, the author observes:]

"Here I have but little to suggest beyond the means usually employed by the well-informed practitioner. At the same time, I venture to urge the great advantages which may result from a more strict attention than is usually given to the posture of the apoplectic patient, and especially to the state of the heart, before the question of large abstraction of blood is decided upon.

"The remarkable effects of posture in emptying the vessels of the cranium, both external and internal, as illustrated by my experiments (see Report), not only warrant the usual practice of raising the head, but should induce us to avail ourselves to the utmost of this method of cerebral depletion, particularly in those cases in which it is advisable to avoid abstraction of blood. . . . . Until within a very recent period repeated bloodlettings and active purgatives were the principal, if not the only remedies recommended in all apoplexies by authors held in the highest esteem. . . . . My experience leads me fully to concur in reprobating the indiscriminate use of the lancet in these cerebral affections, and I hope to be able to indicate some conditions of the system which will enable the practitioner to decide for or against large depletion, in particular cases, with more confidence than by following the rules usually recommended."

[The author next refers to the opinions of former and contemporary writers on the subject of bloodletting in apoplexy. The observations of Abercrombie are shown to have been too indiscriminate, and to have led to an abuse of the lancet; chiefly by his neglect to inquire into the existence or non-existence of disease of the heart. The opinions of Dr. Holland and Dr. Watson are also referred to, the injunctions of the latter being considered as particularly worthy of confidence. The author, however, thinks that an additional security is afforded in the treatment of apoplexy or hemiplegia, if the heart be carefully scrutinized before blood be abstracted. He says:]

"The precaution I would recommend as an invariable rule is that,

* Disorders of the Cerebral Circulation, &c. p. 136.

before the treatment of any case of apoplexy or hemiplegia is commenced, the state of the heart should be as carefully inquired into as the characters of the pulse, the respiration, or any other indications for or against the abstraction of blood. The information thus obtained will very often assist the practitioner, and add much to the interest of the case. The peculiarities of the pulse must, indeed, be noticed, but they are often very perplexing, especially when we are looking to the state of the circulation as an indication for treatment. It will be found that by a careful examination of the heart in these cases much of this difficulty will be removed.

"If no cardiac disease be discovered, or if simple hypertrophy without valvular disease be detected, depletion, both general and local, may be carried on so far as the cerebral symptoms appear to call for that kind of relief.

"But suppose an examination of the heart discloses the existence of valvular disease, to the extent of obstructing the circulation through its cavities, here the pulse will be a most deceptive guide as to the propriety or impropriety of the abstraction of blood. If the mitral valve be principally implicated, allowing regurgitation, the small and irregular pulse might dissuade from the abstraction of blood, which the cerebral symptoms might require. If, in another case, the aortic valves be found diseased to the extent not only of obstructing the onward current of blood, but also of allowing regurgitation, there will, probably, be associated with this lesion considerable hypertrophy of the left ventricle. Here would be observed a full thrilling pulse, but a pulse of increased action without real power, and hence a deceptive pulse, and one which, if relied upon, without reference to the structural changes in the heart, would invite a more copious abstraction of blood than was called for by the general symptoms. In each of these cases greater relief to the symptoms will be obtained by a free local abstraction of blood from the vicinity of the heart, than by a much larger depletion by venesection."

[The author refers to two other conditions of the heart which contra-indicate large abstracting of blood; one is valvular disease, that of obstruction, but accompanied by ossific deposits, as indicated by the cardiac murmur; the other, a dilated condition of the ventricles co-existing with emphysema of the lungs. He then in the next place proceeds to lay down rules for the treatment of the cerebral excitement which supervenes upon the apoplectic seizure. He observes:]

"In cases of apoplexy, about two or three days after emergence from coma, and recovery from the depletion practised during the 'fit,' we often see the patient's face become flushed, the scalp hot, a frowning, or knitting of the brows, slight strabismus, and complaint of pain on one side of the head. This pain is usually referred to the temporal, parietal, or occipital region opposite to the paralysed limbs; and if the patient be deprived of the power of expressing his sensations, his uneasiness is often indicated by the movement of the sound hand towards the head. . . . . At the same time the circulation, which has become much enfeebled by the remedies employed during the fit, becomes more active, the patient is thirsty, and is sometimes troubled with oppressive heat of the body.

"These symptoms, which are indicative of inflammatory action com-

mencing round the clot of blood in the brain, may be generally controlled in the most striking manner by small local depletion from the temple or mastoid process on the side opposite the paralysis; by the application of cold to the head, and by the administration of purgatives, restricted diet, and extreme quiet of the sick room. In addition to these remedies, I have found, when the heat of the head is diminished, that a blister applied near the occiput affords great relief to the oppressive headache. If the patient be not very advanced in years, or exhausted by depletion, great benefit will be derived at this stage of apoplexy from the administration of small doses of mercury. One grain of calomel may be given every six hours, leaving the mineral to act as a purgative, or to slightly affect the gums, but not allowing it to produce ptyalism."

[In speaking of the anomalous neuralgic pains which affect hemiplegic patients, Dr. Burrows remarks:]

"It is difficult to say upon what these pains in the paralysed limbs depend, but they often constitute a most striking feature in the after progress of a case of apoplexy or hemiplegia. These pains are not confined to the integuments, but appear to pervade the deeper seated parts, so that the periosteum of the bone of a palsied limb will become swollen and painful. In some cases these pains have appeared to be attributable to a continuance of irritation from the clot upon the surrounding cerebral substance; in others, there has been no evidence of cerebral excitement; but this painful state of the limb seemed to depend upon return of the function of the nerves, and partly upon the capillary circulation in the paralysed limb not being duly regulated."

[As remedies for these pains the author has tried cold evaporating lotions, warm and anodyne fomentations, stimulating embrocations, but without producing more than temporary relief. He recommends slight depletion from the head in cases where there is headache, and leeches to the painful limb where that and similar symptoms have been absent.

In speaking of the treatment of the stage of paralysis, Dr. Burrows specially inculcates the necessity of caution in allowing the patient to resume his usual habits. A want of due care in this respect may lead to one of three unpleasant results. There may be a fresh and more severe extravasation; renewal of the head symptoms, and disorganization of the cerebral substance; and, lastly, inflammation of the brain and its membranes. Each of these consequences are illustrated by cases. As a means of directly stimulating the suspended action of the muscles, the author considers two remedies, electro-magnetism and strychnia, in neither of which he places any great confidence. Friction of the palsied limbs is favorably spoken of. In regard to setons, so commonly employed at this period, the author believes that they are only useful in idiopathic disease of the encephalon; if the apoplectic symptoms depend more closely upon some lesion of the heart, he regards them as inefficient.] (pp. 136-163.)

Art. 7.—*Observations on Spinal Irritation.*

By Dr. Robert Little, Florida.

(*The Southern Medical and Surgical Journal*, June, 1846.)

Spinal irritation may be either *idiopathic* or *symptomatic;* and though the latter is of much practical importance, our observations will be confined to its existence as an original disease. Young practitioners are frequently perplexed in making a diagnosis of cases of disease presented to their consideration, on account of the variety of forms assumed by them at different times,—at one moment attacking organs, and the next their functions, their onset being not more sudden than their disappearance. The time, however, is near at hand when this difficulty will be overcome, as indeed it now is in a great measure, their capriciousness being referrible to irritation of one of the three great nervous centres—the brain, spinal marrow, or ganglionic system, the second being the most usual seat of irritation. There is no effect without a cause—no function performed without an agent; so those organs and functions which are influenced by spinal or ganglionic nerves, feel that influence when the latter are in a state of disease as well as health, which influence seems to affect parts in proportion to the distance from the seat of irritation. Thus, parts near the spinal column appear to feel the morbid influence arising from irritation of the spinal extremity, to a less extent than those at a greater distance—a circumstance which, if overlooked, may lead the practitioner into the error of supposing the disease to be local, or rather the cause producing it to be situated in the complaining organ, instead of referring it to its *true seat—the brain* or *spinal marrow*. Many have been led to doubt the influence which is said to be exerted (perniciously) by irritation of the spinal marrow: they refer the irritation to the ganglionic system, because of the special functions attributed to that system, instead of to the nerves arising immediately from the spinal marrow. The implication of ganglionic with spinal disease, undoubtedly may, and usually does produce a modification in the symptoms present; this modification being observed *only in cases* where the healthy influence of the ganglionic system is manifest. The spinal and ganglionic nerves from their proximity—having but for a very short distance a distinct existence—are extremely liable to sympathize with each other, or rather, disease is very apt to travel from the former to the latter, and thus cause the error into which many have fallen.

All parts of the spinal column are liable to be affected; and from the situation of the sympathizing part are we enabled to judge of the seat of irritation. Irritation of the cervical division is indicated by pains in the face, temples, and scalp, accompanied frequently by rigidity of the muscles of the jaw, when confined to the superior part. When the irritation is lower down, there is pain in the region of the clavicle, scapula, and chest, extending along the arm, giving rise to great lassitude, sighing, spasmodic twitching of the muscles, &c. When the dorsal division is affected, we have, in addition to a few of the foregoing, stricture across the chest, difficult breathing, palpitation of the heart, angina pectoris, darting pains in the intercostal muscles, edges of the ribs, and the

epigastrium; lower down still in the dorsal division, pains in the stomach and abdomen are felt. In addition to these, a burning sensation in the sternum and ensiform cartilage is said to be *always* present in decided cases of irritation of the dorsal nerves.

When the lumbar and sacral divisions are in a state of irritation, we have pains of an acute lancinating character, soreness in the skin and muscles over the genital organs, spasmodic twitching along the course of the crural nerves, together with an unsteady carriage in walking; the patient having no confidence in his ability to retain an erect posture, and exhibiting the reeling appearance of a drunken man.

As before remarked, spinal irritation is liable to be complicated with irritation of the various ganglia; so from the special influence exerted by the latter over the heart, lungs, stomach, intestines, genital organs, and the sympathies, we have, when they are deranged, a perversion in the functions of the organs named. The symptoms observed, in addition to the foregoing, when the superior spinal nerves extend their irritation to the cervical ganglia, are acute pains in the head, throbbing of the temporal and carotid arteries, and an uneasy sensation in and under the angle of the jaws and front part of the neck. The irritation, when extensive, is communicated to the cardiac plexus, indicated by violent palpitation of the heart, painful sensation in the organ, and a feeling of inability to expel the air from the lungs, symptoms which are aggravated by any sudden or violent emotion of the mind. Should the irritation extend to the stomachic plexus, a sense of depression is felt in the pericardial region immediately after a meal, the patient complains of indigestion, tenderness on pressing the stomach, with the thousand other symptoms accompanying disordered digestion. A fear of death from apoplexy constantly tormented a patient affected with irritation of the stomachic plexus, with whom we were intimate a few years ago, to such an extent that he would never stoop to pick up anything from the ground, or permit himself to be alone for any length of time lest he should suddenly fall a victim to the dreaded disease. He was finally relieved of his disease, and his restoration to health dissipated the fear of death from apoplexy. The secretions of the stomach are also deranged to a great extent; the gastric juice becoming acid, and incapable of performing its duty as a solvent of food. The liver is occasionally affected through the medium of the secondary ganglia of the central plexus, indicated by a dull pain, and perverted function, thus leading the superficial observer into the error of "bleeding, blistering, and giving mercurials," and otherwise tormenting the unlucky patient with a view of correcting a diseased liver; and all to no purpose—the *fons et origo* of the disease not being understood. In short, all the abdominal and pelvic viscera, as their special ganglia become implicated in the irritation, are in turn affected; none, however, so commonly or so severely as the uterine organs.

The difference in the intensity—violence of the symptoms—in various cases is not less remarkable than the appearances assumed by the disease, ranging as it does from the slightest perceptible to the most excruciating pain. In mild cases the pain is scarcely ever noticed, save when the patient's attention is directed to it, considerable pressure on the spine being necessary to cause much uneasiness; while in others, pres-

sure, even gently applied, causes a degree of pain almost insupportable, and not unfrequently spasms of the most frightful kind. Cases of such severity as the latter are not frequently met with in a limited country practice; still, cases approaching them are sometimes observed. The pain is intermittent or continued, as the disease is mild or the reverse.

The diagnosis of *spinal irritation* is usually not difficult, *percussion* or *pressure* betraying sensibility at some point on the spinal column where irritation exists, not by acting immediately on the spinal marrow, inclosed as it is in a bony case, but on the nervous filaments supplying the processes and arches of the column and neighbouring muscles and ligaments. To this there are exceptions, as we have seen more than one instance of unequivocal spinal irritation, without being able to detect the least sensibility on pressure. Still, however, pain on pressure should be received as the most certain usual diagnostic symptom.

In regard to prognosis, little more can be said of this than of other diseases, depending as it does on the violence, extent, and duration, of the affection. In mild cases of recent standing, we may generally promise a cure; and even in pretty severe cases much may be done towards relief by a judicious course of treatment.

[The treatment advised by the writer, and which he illustrates by cases, consists in occasional local depletion and counter-irritation over the tender vertebræ. The only internal treatment is, mild aperients, tonics, and a well-regulated nutritious diet.]

Art. 8.—*Observations on Spinal Irritation.* By Charles Favell, m.d., Physician to the Sheffield General Infirmary.

(*The Provincial Medical and Surgical Journal*, June 24, 1846.)

[The subject of spinal irritation is also ably considered in a clinical lecture by a physician whose early and lamented death has recently been recorded. His observations are to the following effect:]

Spinal irritation is characterized by morbid sensibility of certain nerves proceeding from the spinal cord, and by a preternatural susceptibility of the cord or its coverings to external impressions. You will observe that both these features of the affection were very well marked in the cases which have been already detailed; in one case the morbid sensibility of the nerves was evidenced by painful cramps in the lower extremities, and in the other by constant and severe pain in the side; whilst pressure over the same portion of the spinal column occasioned pain and uneasiness in both.

It is further worthy of remark, that whilst the nervous centre is the seat of the disorder, the pain is situated in some distant part. On what, then, does this abnormal state of things depend? In other words, what is the immediate and efficient cause of spinal irritation? On this subject we find that pathologists entertain very different opinions. Some regard it as consisting in nothing more than mere functional disturbance; whilst others believe it to be the consequence of some organic lesion of the cord or its coverings. For my own part, I believe the affection depends upon a hyperæmatous condition of the blood-vessels at the origin of the spinal nerves, and I am chiefly induced to adopt this

opinion from two considerations—the influence of pressure, and the effect of treatment.

Now let us notice these two particulars. 1st. *Pressure.* You are of course aware that when any of the tissues of the body are the seat of acute or chronic inflammation, the pain which results is augmented by pressure. Thus, in cases of peritonitis, the abdomen is intolerant of even very slight pressure; in cases of gastro-enteritis, the effect of the pressure often determines our opinion respecting the nature of the disease; and in pleurisy and pericarditis also, pressure in the intercostal spaces, or even upon the ribs, greatly aggravates the pain; and in like manner, in the cases under consideration, pain and tenderness are experienced by the patients when pressure is exerted upon a portion of the spinal column. But there are two objections which may be urged against the value of the indication we are at present considering—the influence of pressure in causing an increase of pain. *It may be urged first, that the spinal cord, with its membranes, is too securely protected by the bony canal through which it passes to be liable to be influenced by any moderate amount of pressure which may be employed above it; and, secondly, that in many cases of simple hysteria, the apparent suffering occasioned by pressure on the spine is quite as great as in the cases under consideration.* Let us briefly notice each of these objections.

1st. *The spinal cord and its membranes are removed from the influence of pressure by the bony canal through which it passes.* Now, to this objection, a threefold reply may be returned. In the first place, it may be remarked, that if the cord be really so completely removed from the influence of pressure as the objection assumes, then, except the vertebræ themselves be diseased, every portion of the spinal column should be alike sensible or insensible when pressure is exerted along the course of it. But this we know is not so. In the two cases which have been recorded, the tenderness, or increased sensibility, was circumscribed. It existed over one particular portion of the spinal column, and when the same amount of pressure was exerted over all the rest, it occasioned no tenderness, no pain, no inconvenience. Hence we may fairly infer the possibility of affecting the cord or its membranes, in certain morbid conditions of one or the other, by pressure being exerted along the vertebral column.

Secondly, the peculiar anatomical arrangement of the blood-vessels of the spinal cord render it extremely probable that the cord should be influenced by external pressure. "The spinal cord and the nerves which emerge from it," says Dr. Todd, "are surrounded by a venous anastomosis of remarkable complexity. These veins do not possess valves; they communicate freely with the superficial veins, and with the numerous muscular veins in the region of the back." Now the very circumstance of this free communication existing between the blood-vessels of the cord and the superficial veins of the back, is not only an *a priori* argument in proof of the possibility of affecting the cord or its membranes by external agency, but it also satisfactorily accounts for the facts for which I am contending. In other words, we see not only why such should be the case, but also the mode in which it operates.

Thirdly, in cases of unequivocal spinal meningitis, pressure or percussion along the course of the vertebræ increases the local pain from which

patients suffer. I can vouch for the correctness of this remark from cases which have fallen under my own personal observation.

But I hasten to notice the second objection to which I have adverted.

2d. *In many cases of simple hysteria it is contended the apparent suffering occasioned by pressure on the spine, is quite as great as in the particular class of cases at present engaging our attention.* Now, to this objection I may return again a threefold reply. In the first place I remark, that in cases of pure hysteria, the pain of which patients complain when pressure is made upon the spinal column is not circumscribed—it is not confined to some particular locality, but, on the contrary, is equally great over every portion of the vertebræ; and moreover, it is not confined to the spinal column, but is of equal severity when the pressure is directed upon the fleshy parts of the back, on each side of the vertebræ.

Secondly, I observe, that whilst in cases of spinal irritation the suffering of the patient evidently increases with the increase of pressure which is employed, this is not the case in hysteria. In this latter affection, the *apparent* suffering of the patient bears no proper proportion to the pressure. Hence we not unfrequently find that in hysterical subjects, the slightest touch with the finger over any part of the back will cause them to cringe and give way, to sob, and gasp, and exclaim, whilst a considerable addition to the pressure scarcely, if at all, increases their distress. But we must further bear in mind that this morbid sensibility in cases of hysteria is not confined to the back, but is manifest in other parts of the body; pressure on the sternum or on the sides will occasion precisely similar indications of uneasiness or pain. We often perceive in these cases, that merely placing the hand, or even the finger, on the sternum or abdomen, without exerting the slightest pressure, the patient shrinks in a moment, as if the suffering which was induced was almost intolerable.

Thirdly, I remark that the immediate seat of the morbid sensibility which exists in hysteria, is obviously the common integument; hence, if a portion be taken up between the finger and thumb, as much distress is occasioned to the patient as if any amount of pressure were exerted upon the spinal column.

Having thus disposed of the two objections which are most frequently urged against the indication which is afforded by pressure on the spine, I proceed to notice, in the next place, the effect of treatment, as corroborative of the view I have taken of the nature of the affection which is the subject of our present observation. And here I may observe, in general, that the method of treatment which affords the most speedy and effectual relief, is precisely that which is best adapted to relieve a state of local hyperæmia. I direct your attention to three remedies in particular—rest, the abstraction of blood, and vesication.

1. *Rest.*—In all cases of local hyperæmia rest is an important means of cure. So long as patients are going about their usual occupations and work, especially so long as they are actively employing the organ which is the immediate seat of disease, the use of remedies is fruitless. The truth of this remark is abundantly confirmed by what we witness every day; and it is also corroborated by what we often see in cases of spinal irritation. In these latter cases the general health is frequently

so little disturbed, that persons are unwilling to submit to the degree of confinement which is necessary, and the consequence is, that they do not obtain the relief which they desire. I need scarcely observe, that in order to secure the greatest amount of rest in all cases where the spinal marrow, its membranes, or the nerves proceeding from it, are the seat of morbid irritability, a patient should be confined as much as possible, to the recumbent posture. But I must further remark that, according to my experience, it is not a matter of indifference whether a person lies prone or supine. The former position is decidedly preferable, and hence I generally have my patients placed on a prone couch. The advantages which appear to me to result from this practice are, first, that the common effects of gravitation are obviated; and, secondly, that the necessary remedies are much more conveniently applied.

2. *Abstraction of Blood.*—The relief which is afforded by topical bleeding in cases of spinal irritation is generally very great and often immediate. It was so in the first of the cases which I have detailed. The cramps ceased, and the tenderness on pressure disappeared immediately after the patient had been cupped. The previously constipated state of the bowels of this man (they had not been moved for a week, and only nine times during the preceding nine weeks), may possibly, by some persons, be regarded as sufficient to account for the symptoms under which he was labouring at the time of his admission. But that this was not the cause of his sufferings is obvious from the immediate relief which followed the abstraction of blood, more than twenty-four hours before the purgative medicine had produced any effect upon the bowels. The simultaneous disappearance of the cramps in the extremities, and the pain and tenderness over a limited portion of the spinal column, is further sufficient to connect the two together in the relation of cause and effect. But although the relief which results from bleeding is often so speedily manifest, yet it is not so in all cases. Sometimes the operation has to be repeated several times before any mitigation of the symptoms takes place, and in other instances relapses occur, which render it necessary to have recourse to the same means again and again. In the case of Bilton, we perceive that although he was so perfectly relieved by the cupping, yet some days afterwards he complained of numbness of his legs, which prevented him walking, and there was at the same time a return of the tenderness over the spine. For the relief of these symptoms, which I believe were occasioned by congestion of the vessels of the spinal cord, leeches were applied to the tender portion of the spine, and it was subsequently necessary to apply two blisters. In a case which fell under my observation a short time since, the cupping had to be repeated more than a dozen times, but on each occasion the relief afforded was very marked and considerable.

3. *Vesication.*—The application of blisters in cases of spinal irritation is often productive of great relief: but in these cases, as in cases of inflammation of internal organs, they are not equally serviceable at every period of the disease. If blisters be applied at too early a period, before the congested blood-vessels have been relieved by the abstraction of blood, they do not, in recent cases at least, afford an adequate amount of relief, but on the contrary, they produce a considerable degree of irritation, and occasion a very much greater amount of pain than they do if

they are employed later. I have more than once seen persons who were very tolerant of pain, and accustomed to the application of blisters, who, nevertheless, when suffering from spinal irritation, complained of the pain arising from a blister applied at too early a period, as being exceedingly severe, and almost intolerable. It is frequently found to be desirable to employ counter-irritation for a while after the more urgent symptoms have been overcome. Hence, you will recollect, that in the case of Sarah Ann Hooper, after she had been greatly relieved by leeches and blisters, as some uneasiness remained about the side, and slight pain was occasioned by pressure over the upper part of the dorsal portion of the spinal column, she was ordered to have the back rubbed with the croton-oil liniment, which had the effect of producing a plentiful eruption, and ultimately removing the disease.

With respect to medicines in this affection, I shall only observe, that beyond regulating the state of the bowels they are of no use.

Art. 9.—*Case of Catalepsy, with Observations.*

By O. B. Bellingham, M.D.

(*Dublin Medical Press*, July 8, 1846.)

[The subject of this case was a female, aged 18, healthy and of good complexion, and who had enjoyed good health until six months previous to her admission. At that time she was suddenly seized with a fit having the characters of catalepsy. Since that time they have recurred almost daily, and sometimes many attacks have taken place on the same day. The tongue is clean, appetite good, pulse 84; the menses have not appeared for six months. The fit is thus described:]

"The cheeks became flushed, and the eyes fixed, but not staring; the pupils slightly dilated, but they contracted and dilated as the lids were opened and closed; she winked occasionally. She lay in exactly the position in which she had been previous to the seizure, viz. partly on the right side, the face being next the pillow, and the elbows and knees slightly flexed, the lips closed, the joints of the extremities all exceedingly rigid, the teeth shut, and not to be separated, the muscles of the neck rigid. On taking hold of the arms, in order to endeavour to place the patient in the half-sitting posture, the whole body was raised exactly as a subject would be in which cadaveric rigidity had set in. The heart beat strongly and rapidly, and the cheeks became more flushed, while the respiration continued tranquil.

"After the fit had lasted about ten minutes, the joints were found to be less rigid, they yielded to the pressure, and the arms, without using much force, could be extended and moved in any direction, and remained in the position in which they were placed. Both arms were now straightened and elevated above the head, in which position they were allowed to remain, no motion but the slightest quivering of the fingers was observed. The cheeks and lips now became still more congested, the heart beat very violently and rapidly, its pulsation elevating the clothes, pulse 120: notwithstanding the force of the heart's action, the respiration continued tranquil. The head and face felt hot, while the temperature of the extremities was lower than natural, and she was perfectly insensible to all external impressions.

"In about twenty-five minutes from the commencement of the seizure, the patient sighed deeply, and after five or six very long sighs she moved her lips, and soon answered questions. She had no recollection of what occurred during the fit; the pulse and the action of the heart returned to the normal standard, and she complained merely of a feeling of weakness."

[The treatment consisted of leeches to the internal nares, purgatives, and the sp. ammon. fœtidus in mixture; shower-baths were afterwards added. Under this treatment the fits gradually became less frequent, and at length were entirely suspended. The narrator appends the following remarks:]

The symptoms which characterize the cataleptic seizure are very peculiar, but they are differently described by different authors. This is probably owing to the opportunity of determining doubtful points being seldom afforded, in consequence of the unfrequency of the disease, or the disease has occurred under circumstances which prevented them from being taken advantage of.

The cataleptic seizure may or may not be preceded by symptoms indicating its approach. In the present case, the patient was generally aware when the fits were about to come on, and the symptoms which she experienced at these periods were palpitation and acute pain, referred to the left side near the false ribs; latterly, palpitation alone preceded the seizure; but on the occasions on which I witnessed the fits, there did not seem to be any premonitory sign, at least the patient did not give any notice of such to those about her.

The fits did not observe any periodicity, but occurred at very irregular intervals; they lasted also a variable time, two hours appeared to be about the duration of the longest, about twenty minutes of the shortest. They occurred sometimes every hour, sometimes an interval of several hours elapsed between them, and on one occasion, previous to the patient's admission, they were stated to have subsided for a fortnight, although she had undergone no treatment. The fits occurred more frequently at night, or towards morning, than during the middle of the day, at least while the patient was under observation.

During the fits, the suspension of sense and voluntary motion was complete; the patient was perfectly insensible to everything done during them, and remembered afterwards nothing which had occurred. She remained in the exact position in which she had been when the fit set in—if she was sitting, she remained so, if lying down, the same was observed; no fit occurred while in the erect posture, and the patient said she had always sufficient warning of its approach to seat herself, or lie down.

The rigidity of the muscles of voluntary motion, during the early stage of each fit, was almost tetanic; but after the fit had lasted for about ten minutes, this began to diminish, and the limbs yielded to the force used, and their position could *then* be changed. Some of the voluntary muscles, however, as the masseters and temporals, remained during the entire fit in a state of rigidity, and the jaws continued firmly closed; on the other hand, the orbicularis palpebrarum muscles were unaffected throughout, and the patient winked at intervals.

In the early stage of the fit, the position of the limbs could not be changed (as I have already said), but as the fit advanced, this rigidity

diminished gradually to a certain point, and then the limbs could be placed in any position, and they preserved that position as long as the fit lasted. The latter feature in catalepsy is that which hitherto has principally attracted attention, but this state of the muscular fibre is to be regarded as only a more moderate degree of rigidity than the preceding. The muscles of the extremities nearest to the trunk maintained a higher degree of rigidity throughout the fit than those at a distance from it; thus the muscles which connect the trunk with the arms were more rigid than those between the arm and forearm, and the latter than those which move the wrists. Some sets of muscles even continued throughout more rigid than others; thus the arms could be elevated without using any force, but it required some force to depress or bring them back to their former position, and they could be more readily extended than flexed. This fact has also been noticed by M. Sarlandiere; in describing the symptoms of a case under his care, he observes—"when we elevated a limb it gave the sensation of being extremely light, as if the patient assisted, whilst resistance was experienced in depressing the limbs." Another peculiarity noticed in this case was, that when the rigidity had been once overcome, and the limbs had been flexed and extended a few times, they yielded still more readily afterwards.

The almost tetanic rigidity with which, in this case, the fits set in, seems to have been overlooked by the great majority of writers, probably owing to its being present only at the commencement of the attack, and diminishing afterwards. MM. Georget and Calmeil are among the few writers who have noticed the fact; but their definition (which has been already quoted) would lead to the supposition that this state of the muscular fibre continues throughout the fit. The majority of writers, however, have fallen into the opposite error, and either deny the existence of rigidity, or mention it as only an occasional occurrence. Thus M. Bouillaud (in the article Catalepsie, in the Dict. de Méd. et de Chirurg.) observes, in reference to M. Georget's definition, that "the latter is wrong in laying it down that in catalepsy a tetanic rigidity of the muscular system is constantly present;" "the opposite condition, viz. a state of suppleness of the limbs, appears to be the ordinary condition." Dr. Copland observes, that "the muscles are often slightly rigid, but not to the extent of preventing the easy change of position of the limbs;" and in noticing M. Georget's statement, "that the muscles often present a degree of rigidity almost tetanic," he says, "this is only sometimes the case, particularly when the disease is more nearly allied to ecstacy." The fits observed in this patient had, however, certainly no analogy with cataleptic ecstacy, or ecstatic trance (as it is sometimes called), and the discrepancy between the foregoing statements appears to be reconcileable, when we recollect, that, at one stage of the fit, tetanic rigidity of the voluntary muscles is in a great measure absent, and the limbs admit of being readily placed in any position; while at another stage of the same fit, tetanic rigidity of these muscles is the most prominent symptom:—more particularly as the authors whom I have quoted appear to have drawn their characters of the disease rather from the descriptions of others than from personal observation.

Catalepsy, owing to its rarity, and to the singularity of its symptoms, has been regarded by some writers as either an imaginary or a feigned

disease. Those who look upon it as such, can never certainly have seen a case of the disease; because it would be impossible for the strongest man to maintain the fatiguing positions for the length of time which cataleptic patients are capable of doing during the continuance of the fit. In this case, for instance, both the arms of the patient were upon one occasion elevated, and extended outwards; at the same time, both lower extremities were raised from the bed (the patient lying upon her back), and the limbs preserved this irksome position to the end of the fit, without the slightest support, although the lower extremities had to bear the additional weight of the bedclothes. These experiments were not, however, often repeated, the fits seemed to pass off more quietly, and with less inconvenience to the patient, when she was permitted to lie undisturbed; whereas the face became more flushed, the palpitation increased, and the patient complained more of debility afterwards, if she had been placed in a fatiguing position during the fit.

Catalepsy, in treatises on medicine, is usually described in connexion with epilepsy, or it is regarded as being nearly allied to this disease. Catalepsy certainly resembles epilepsy in the suddenness of the attack, in the loss of sense and intelligence which accompanies it, and in the fits occurring at more or less distant intervals; but here the resemblance ceases. Epilepsy is characterized by alternate, sudden, strong contractions and relaxations of the muscles of voluntary motion; but in catalepsy there is merely a state of permanent contraction of these muscles; the former, therefore, is an example of convulsion or clonic spasm, the latter of tonic spasm; there would, indeed, appear to be more analogy between catalepsy and tetanus than between it and epilepsy. In the present case, the rigidity of the muscles of voluntary motion in the early stage of the fit resembled that which is familiar under the name of cadaveric rigidity; in attempting to raise any of the limbs the whole body was moved, exactly as happens with a subject some hours after death, in which cadaveric rigidity had set in. This, coupled with the permanent rigidity of the muscles which close the jaws, which continued throughout it, would seem to favour this view of the subject.

With respect to the causes of catalepsy we have little positive information. In the majority of cases which have been reported, it has been developed under the influence of some strong mental emotion, particularly of a debilitating nature. Here, however, there does not appear to have been any cause to which the disease could be attributed: the patient resided with her parents in the country, and was happy and contented, at least she said so: she had enjoyed perfect health previously, and she had the appearance of being in good health on her admission.

From the disease occurring almost exclusively in the female, it has been supposed by some to depend upon irregularities of the menstrual secretion. In this instance, the patient menstruated for the second time almost immediately after coming into the hospital, but it did not appear to exert any effect upon the disease, as the fits were repeated during this period, and afterwards, as frequently as before it. Indeed I am inclined to think that too much importance is generally attached to irregularities of this secretion; if it is scanty, or absent, in a young female labouring under any chronic disease, the symptoms are almost certainly referred to it, and the treatment is directed to restoring it, instead of to the

removal of the causes upon which it depends: amenorrhœa, though usually made a distinct disease, is merely a symptom, and it would be just as injudicious to direct our treatment solely against any other single symptom.

Catalepsy is considered by most writers to be little under the influence of remedies, and its treatment, consequently, is in a great measure empirical. Indeed, as the disease is never fatal if uncomplicated, and as in the majority of cases, the fits, after continuing to recur for an indefinite period, either diminish in frequency, or altogether subside, the efficacy of any of the remedies or plans of treatment which have been proposed or employed must remain doubtful.

When the disease can be traced to any distinct cause, the indications are, of course, to endeavour to remove this if it be possible; or if the fits are accompanied by signs of congestion, or determination of blood to any important organ, or by symptoms of derangement of function in any part of the system, the indications of treatment are obvious, and remedies calculated to remove or diminish the one, or to restore the other, should be employed.

ART. 10.—*Tetanus occurring in a case of undetected Rheumatic Pericarditis.*—[The following case is quoted from Bouillaud by Dr. Burrows, in illustration of certain nervous affections which are liable to originate during the progress of acute disease of the heart, and which are frequently erroneously attributed to, and treated for, lesion of the central organs of the nervous system.]

A robust lad, aged 16, was admitted under the care of M. Bouillaud, March, 1834. A fortnight previously he had swelling of his hands and arms, which prevented him from working. Shortly after he was seized with convulsive twitchings of his fingers, which were regarded and treated as epileptic. At the time of his admission his eyes were fixed and haggard, and the pupils dilated. He had the aspect of a man who apprehended some danger: his intellect was clear, but his articulation was interrupted with cries and sobs, called forth by the severe cramps and feelings of suffocation. The fingers, hands, forearms, and toes were violently contracted. The muscles of the lower jaw, of the abdomen, and limbs were as hard as a stone during the spasms. The mouth was opened with difficulty.

During four successive days he suffered from repeated attacks of spasmodic contractions of the limbs, with more urgent symptoms of trismus. Any attempt to swallow aggravated his sufferings. The disease was regarded as inflammation of the spinal cord, and treated as such. The patient died on the tenth day.

Dissection showed a general increased vascularity of the pericardium, with two ounces of pure creamy pus in that sac, and old adhesions of the pleuræ. The brain and cord were congested.

In this case pericarditis was never suspected, and its physical signs were not sought after.

Burrows on Disorders of the Cerebral Circulation, p. 203.

ART. 11.—*On the Employment of Electro-Magnetic Currents in the Treatment of Paralysis.* By GOLDING BIRD, M.D., F.R.S. &c.

(*Lancet*, June 13, 1846.)

[Dr. Bird, whose experience of the therapeutic powers of electro-galvanism appears to have been considerable, gives the following classification of the varieties of paralysis in which he has found it decidedly beneficial.]

1. *Cases of partial paralysis, resulting from congestion or other cerebral mischief, admitting of successful treatment. The congestion or effusion is removed, but a more or less palsied state of some part of the body remains.*—Cases of this kind are common enough; and although the paralysis in general slowly disappears with the cause of the cerebral disorder, still the axiom of "sublatâ causâ, tollitur effectus," does not always apply. Every now and then, although the blow has ceased, the bruise (if the expression be permitted) remains. Time, friction, change of air, restoration of the general health, strychnia, &c., will all succeed; but when with improved general health the stimulus of the electro-magnetic current be employed, success is much more general and certain. All that is required here, is to apply one of the conductors, covered with wet linen, over the trunk of the largest nerve of the part affected, and to pass the other, similarly covered with linen, over the region of the palsied muscle, so as to keep them actively contracting for some minutes. In recent cases, a single application will often succeed; in more chronic ones, the remedy may be continued for weeks, until the paralysis disappears. One of the first cases in which I used this remedy occurred, about nine years ago, in a gentleman holding a prominent position at the bar. I saw him with Mr. Freeman, of Spring Gardens, under whose care he was. This gentleman had palsy of the left side of the face, the relic of an hemiplegic attack following cerebral congestion, the result of intense study and anxiety. His cerebral disease had been cured, his general health restored, but the paralysed nerves of the face alone refused to resume their functions. The electro-magnetic current was applied daily, the patient's footman being the "medical electrician," and in a few weeks he quite recovered.

2. *Paralysis of muscles supplied by the portio dura, following exposure to cold.*—This form of local paralysis, when independent of cerebral mischief, generally yields readily to treatment. Cases, however, occur, in which the nerve remains inactive, and the patient walks about for a long time with a distorted face. The electro-magnetic current is here of great value. I have seen many cases of this kind; one to which I was recently called resulted from exposure of the left cheek of a lady for some hours to a current of air from a broken window. She recovered readily from the accompanying bronchitis, but was left with her features distorted, being drawn to the right side. I at once suggested the current from the apparatus; her maid-servant was the operator, and cured her mistress in a week.

3. *Local Paralysis involving the whole or part of a limb from exposure to cold.*—This variety resembles the last, and is probably of a rheumatic character; although, it must be confessed, it is often a difficult task to

define the line separating rheumatic from some paralytic affections. The following is one of many I have seen:—The aetuary of one of the large assurance offices eonsulted me, with nearly eomplete paralysis of motion of the left arm, sensation being pretty perfect; no pain whatever in moving the limb. During a eold winter he had been in the habit of sitting at his desk, with the right side of his body roasting by a large fire, whilst the left was chilled by blasts of eold air from a frequently-opened door. Gradually, pain and stiffness appeared in the left arm, but no swelling. The pain gradually vanished, and the limb was left palsied. Other remedies proving useless, the electro-magnetic current was applied. I ordered a conduetor to be plaeed over the lower ecrvical spinal region, to influence the origin of the axillary plexus, the other being passed down the arm. After a few weeks he quite recovered. This gentleman was his own operator: he fastened the spinal conduetor in its place by his neekeloth, and thus had the right hand at liberty to apply the other.

4. *Paralysis affecting one side of the body, or a single limb, the result of exhaustion.*—These cases are not unfrequent, and before their nature was understood they used to be fearfully mismanaged, the paralysis being looked to, rather than the eause producing it, and depletion and mercury employed when nutritious food and stimulants were really indieated. It often happens that these eases are directly traeeable to an obvious cause, and then the diagnosis becomes easy. The insidious exhaustion and enervation produeed by excessive lactation is a not unfrequent cause. I saw a well-marked case of this kind five or six years ago, in a patient under the eare of Mr. Pretty, now residing in Mornington road. This lady, a person of weak frame and strumous diathesis, had beeome exhausted by nursing her third infant, and the left arm beeame gradually palsied as far as motion was eoneerned. A generous diet, weaning the child, and the electro-magnetie eurrent, were ordered. I had lost sight of this lady until a few days ago, when I was ealled to see her sinking from phthisis. I then learnt that, under the treatment suggested, the paralysis had soon disappeared.

Paralysis, from enervation, has oecasionally followed sudden loss of blood at flooding labours. I have witnessed eomplete hemiplegia as the result. A ease of this kind I onee saw with my friend Mr. Law, of Finsbury, who had most properly treated the lady with generous diet and iron, under whieh she did well. When under this treatment, in spite of the restoration of the general health, paralysis remains, the eleetro-magnetie stimulus promises, from what I have seen, to be of mueh service.

5. *Cases of rheumatic paraplegia.*—To this category I refer eases of rheumatism, affecting chiefly the lower extremities, the pain and acute aetion disappearing, while more or less complete paraplegia remains. In these eases I have seen the greatest benefit result from eleetro-magnetism, as well as from ordinary electrieity. I have witnessed so many of these cases thus treated do well, that I ean speak with great confidence of its influenee. One ease will suffiee as an example. A man came last summer into Luke's ward, at Guy's, under my eare, with complete paralysis of motion of the lower extremities. He was totally unable to move his feet or knees, and was earried into the ward. This state of things had followed the dashing of ice-cold water on his legs and thighs whilst sweating profusely. But little medieine was ordered for

this man, and in less than three weeks he, under the use of electro-magnetism, walked about the ward, aided by one crutch and his stick. In these cases one conductor should be firmly pressed against the sacrum, whilst the other is placed in a basin of salt and water, in which the feet are immersed.

6. *Paraplegia the result of enervation?*—I am not quite sure of the pathological correctness of the title I have thus assumed. By it, however, I understand a series of cases in which paraplegia, both of motion and sensation, results from excessive fatigue, from sitting for weeks and months together, during the greater part of the twenty-four hours, with the spine somewhat bent. I knew of one case in which a distinguished physician actually became thus palsied, after assiduously devoting his time to the study of certain phenomena by the microscope, in doing which he, for hours together, used to lean over the instrument. There is, however, another cause, unhappily too rife, of these cases, the miserable result of the utilitarian dogma which makes human labour a marketable commodity, without any regard to the conservation of health. I may perhaps startle some by announcing the fact, that I have, in several instances, seen more or less complete paraplegia among a class of labourers of the most oppressed and most unprotected character. I refer to the needlewomen of this metropolis—a class of girls and women who, to earn enough of the wretched pittance they receive from the agents who employ them, to procure the commonest necessaries of life, are often compelled to work for fourteen, sixteen, eighteen hours, or even sometimes longer in the twenty-four hours. They toil on, indeed, at the needle until their sight fails as they drop asleep, waking, after snatching a short slumber, to resume their work. These poor creatures receive from three-halfpence to four-pence halfpenny for making a shirt (for the latter price producing such as is worn by respectable mechanics and others). They are unable to procure proper food, and are often driven to intemperance to forget their miseries, or to prostitution to add to their wretched income. No wonder that they become exhausted, enervated, bloodless; and paraplegia is not unfrequently the result. I had under my care in the hospital this last summer, a young woman who had once moved in a respectable sphere. She was quite paraplegic. She had been exhausted by working in the way I have described, and declared to me, that excepting dozing in her chair, she had often not slept for two nights together. She first felt vague pains in the toes, then in the knees; rigidity came on, and ultimately she became as I saw her, the lower half of her body being as powerless as if made of marble.

In many of these cases no organic lesion exists; and by due nourishment, rest in the recumbent position, iron or zinc, and the subsequent application of the electro-magnetic stimulus, recovery generally takes place. These cases are little known, and will continue (we must fear) to occur, so long as the labour of the friendless and dependent female is regarded with no more feelings of sympathy or humanity than the amount of duty performed by a steam-engine or any other machine.

In thus advocating the electro-magnetic current as an important and most valuable excitant of paralysed muscles, I must still acknowledge that it is anything but a universally-successful remedy. In the great majority of forms of palsy above described, it is indubitably in some the

actual curative agent; in all it expedites and aids the cure, in none is it injurious. As a general rule I think it will be found, *cæteris paribus*, to act most effectually in proportion to the acuteness of the case. In chronic paralysis we must recollect that any new tissue deposited during, perhaps, many months, or longer, although organized like the healthy structure, and provided with its due supply of nerves, is still composed of fibres which have never obeyed the influence of the will—have never moved at the volition of the patient. This I believe to be the reason of our not at once rousing a long paralysed muscle into action. We can here only expect to succeed by submitting the paralysed part for a long period to the influence of the remedy. I cannot conclude without urging upon the profession the impropriety and mischief of using electricity in some cases merely because paralysis exists. In true spinal paralysis, depending upon organic lesion, the electro-magnetic current often does mischief, especially where there is subacute inflammation, or a highly irritable state of the spinal marrow—a state of things shown, among other symptoms, by the involuntary and unconscious starting of the legs. In all such cases the remedy does no good, and in some it does great harm, the effect of its local irritation, when applied to the legs, appearing to be reflected to the spine, and greatly increasing the patient's sufferings.

Art. 12.—*On the Treatment of Chorea.* By H. M. Hughes, M.D.

(*Guy's Hospital Reports* October 1846.)

[Dr. Hughes has contributed an able digest of one hundred cases of chorea, an analysis of which enables him to offer the following practical remarks on the various medicinal and other modes of treatment generally employed in that disease.]

Purgatives.—From his own personal observation, Dr. Hughes does not regard the simply purgative plan as desirable or successful in chorea. He has tried it alone and in conjunction with wine and good diet, but in severe cases has never been satisfied with it. In cases accompanied by great vital depression it is inadmissible. In combination with tonics purgatives are more efficient. He speaks highly of a cold infusion of rhubarb in port wine, made as follows: upon half a drachm of sliced rhubarb eight ounces of port wine are infused, it is allowed to macerate for twelve hours, and strained; the dose is two or three tablespoonfuls in the twenty-four hours. This is particularly suited to ill-fed and anæmic subjects.

Mineral Tonics.—These given indiscriminately, says Dr. Hughes, would of course fail in numerous cases. Each case of chorea should be studied *per se*, and treated according to its individual as well as general characters. In some instances the disease may arise from loaded bowels, tumours, &c. In such cases, purgatives with diet, will rarely fail to relieve, if they do not cure. In other instances it may be connected with deficiency of catamenia, or other sources of uterine irritation. In such, cupping in the loins, hip-baths, aloes, steel, &c., will be of service. In other cases chorea is associated with an inflammatory condition of the pericardium, when the use of antiphlogistic remedies, calomel, and anti-

mony, &c., are called for; in other cases an inflammatory state of the spinal theca is present. Still there are, comparatively, few cases in which mineral tonics may not at one time or other be advantageously given. The different medicines of this class are differently estimated by practitioners. Dr. Hughes regards all as nearly equally efficacious. He has seen iron cure where zinc and arsenic have failed, and vice versa. Of *arsenic* he says, that in his practice it is slightly inferior to the other mineral tonics. In 7 cases in which he gave it, it cured 2, failed or disagreed in 5.

Iron is especially adapted to chlorotic females and to anæmic children. Dr. Hughes prescribes it in the form of sulphate, with extract of gentian, as the sesqui-oxyde, or in the steel mixture. He gave it in 29 cases; of these

It effected a cure in 19, or 69 per cent.
Relieved in 2
Failed in 8, or 27 per cent.

In five of the successful cases zinc had failed.

Zinc.—This was generally given in the form of sulphate, beginning with one or two grains three times a day, and increased by a grain to each dose twice a week, in some cases up to thirty-six grains three times a day. It has not often caused sickness. The results of the zinc treatment are:

Given in 63 cases.
Cured in 45, or 71 per cent.
Relieved in 2
Failed in 16, or 25 per cent.

In 7 of these none had previously failed. *Antiphlogistics* were adopted in 3 cases, 2 of which were cured, the other relieved.

Electricity has often very remarkable effects, and in very aggravated cases. Dr. Hughes observes that when the body has been wasting and the mind apparently giving way, and the disease proceeding unchecked by other means, he has seen this agent effect a marvellous change; the motions have become under control, the body has become robust, and the face plump; the disease has in fact been cured. When electricity acts beneficially it produces its effects more rapidly than any other remedy which is not of universal application in chorea. In some patients it has obviously done harm. In weak, nervous, timid children, electricity often increases the disease. The cases in which it appears to be more especially applicable are those occurring in young women in whom the disease assumes somewhat of an hysterical character, and those protracted cases in boys in whom other remedies have been tried ineffectually, and in whom the disease is dependent upon no obvious source of irritation.

The only other remedy to which it is considered necessary to refer is the shower-bath. I have not the means of ascertaining the number of cases in which it was employed, nor am I able to judge of its influence when employed alone in the treatment of chorea; conjoined with other remedies, however, I have often seen it prescribed with advantage; but I have also seen it do harm. The observations that have been made as to

the employment of electricity are applicable, in a minor degree, to the shower-bath. It is a less powerful remedy than electricity, and produces its effects less speedily; but it has appeared to me to be applicable to the same forms of the disease, and to require the same discrimination in the selection of suitable cases, and the same caution in its application.

SECT. III. DISEASE OF THE RESPIRATORY SYSTEM.

ART. 13.—*On the Fallacies attending Physical Diagnosis in Diseases of the Chest.* By THOMAS ADDISON, M.D.

(*Guy's Hospital Reports*, October 1846.)

[As Dr. Addison justly remarks in his introduction to the following communication, there is no one thing which has been more prejudicial to the study of auscultation than the overweening importance and assumption of infallibility attached to it by some of its ill-judged advocates. Great as the assistance undoubtedly is which it affords as an adjunct to the investigation of the rational signs of disease, it is indisputable that even in the hands of a proficient the stethoscope will often lead to mistakes in diagnosis if it be exclusively relied upon, to the neglect of the information to be derived from other sources. To strip the stethoscope of the extravagant and meretricious pretensions thrust upon it by injudicious friends, to make a candid acknowledgment of the manifold difficulties to be encountered in its employment, is Dr. Addison's aim, and although we are of the number of those who look upon a knowledge of auscultation as indispensable to make not only an accomplished but even mediocre physician, we are glad of the opportunity of laying before our readers so clear and candid a statement of the fallacies to which it is occasionally subservient. The author has adopted the method of enunciating certain propositions, the principal of which are thus exhibited :]

1. It is well known that many persons while under examination entirely fail to perform the respiratory act efficiently, either from nervousness, or from mistaking the manner of accomplishing it. This may lead to an erroneous belief that the respiratory murmur is deficient, or even absent, while the lungs are perfectly healthy.

This source of fallacy is avoided by desiring the patient to cough, and to inspire deeply, so as to cough a second time. This done on both sides of the chest, the actual state of either lung may be ascertained with tolerable precision.

2. Whatever lessens the freedom, mobility, or elasticity of the ribs, renders the sound on percussion more dull. Hence it is that in rickety persons, where deformity of the chest has taken place subsequent to birth, the signs furnished by percussion are often extremely unsatisfactory; and, indeed, under such circumstances, neither percussion nor, in many instances, auscultation, can be much relied upon.

3. Some persons with actual deformity have naturally such fixedness of the ribs, that they at all times manifest very imperfect resonance, as well as considerable feebleness of the respiratory murmur.

4. The rigidity of the cartilages of the ribs in advanced life has a similar effect; and, moreover, often tends to throw obscurity over hypertrophy of the heart by preventing the usual heaving of the ribs at each systole of the hypertrophied organ.

5. When exploring the chest in a case of recent disease, we may be misled by the permanent effect of an ancient pleurisy.

[The physical signs of old pleuritic contraction independent of deformity palpable to the senses, are stated to be, "dullness on percussion, feebleness or absence of the respiratory murmur, constrained movements of the ribs, dry crepitation, and harsh sonorous râle during inspiration." The value of these signs is much increased by their incompatibility with the recent history of the case.]

6. When, as usually happens, rickety deformity of the chest consists in lateral flattening of the ribs, with projection of the sternum, the action of the heart is liable to beat with such violence, and over so diffused a space, as to lead to the unfounded apprehension of organic disease of the organ.

7. The dullness on percussion caused by pushing up of the diaphragm by an enlarged liver, or fluid in the peritoneum, is liable to be mistaken for dullness caused by fluid in the pleura.

8. Bronchitis is a frequent source of fallacy, it may greatly obscure pneumonia, phthisis, and pleurisy, as well as other chronic diseases of the organs.

9. When the bronchitic complication of phthisis is considerable we often fail to detect some or all of the physical signs of the latter, such as dullness on percussion, tubular respiration, and even bronchophony and pectoriloquy. This is more especially the case in the earlier stages.

[It is under these circumstances, Dr. Addison observes, that the too exclusive stethoscopist is liable to be beaten in diagnosis by those who altogether reject physical examination, but the former will obviously have the advantage if he institutes, likewise, a careful inquiry into the history of the patient, and the rational signs of his disease. According to Dr. Addison, the individual symptom which, above all others, should lead to the apprehension of tubercular disease, is occasional slight hæmoptysis just sufficient to tinge the sputa.]

10. Dullness of sound on percussion, tubular respiration, bronchophony, pectoriloquy, and gurgling, are not necessarily conclusive of phthisis. All these signs may result from changes induced by a former pleurisy, from pleuropneumonia, or whooping-cough, [? Ed.] or even from recent pneumonia or pleurisy associated with considerable bronchitis.

[Cases are given in illustration of this proposition.]

11. When, in phthisis, the larynx is so involved as to impede the entrance of air and give rise to permanent sonorous râle in the tube, the reverberation of this râle through the entire chest is apt to lead to the erroneous suspicion of disease in the lungs.

12. Complete loss of voice from disease of the larynx almost completely nullifies the results of auscultation.

13. The existence of a cavity may be overlooked if the bronchial tubes leading into it are plugged with mucus.

In every case of suspected phthisis the patient should be made to

breathe and cough with violence; this will dislodge mucosities and render the existence of a cavity perceptible.

14. A patient may have all the rational signs of incipient phthisis while auscultation does not reveal any change in the lungs.

Similar symptoms may arise from relaxed uvula, and in hysteria.

15. Dilated bronchial tubes surrounded by indurated pulmonary tissue, cannot be distinguished from phthisical lesion by auscultation alone, especially if situated in the apices of the lungs.

In such cases the diagnosis is chiefly formed by the history of the case.

16. Malignant disease of the lungs cannot be distinguished from other lesions by auscultation alone.

17. If acute pneumonia have proceeded to complete hepatization when we first examine the patient, the physical signs are frequently insufficient to distinguish it from tubercular consolidation, or ancient pulmonic induration. This is especially the case if the apex of the lung be the seat of the induration.

18. Pneumonia may occur without cough, and so closely resemble simple continued fever that both the stethoscopist and the non-stethoscopist are apt to be deceived.

In such a case the stethoscopist has infinitely the advantage, and will rarely fail to detect pneumonia by the physical signs.

19. When the anterior and inferior portion of the left lung is consolidated by pneumonia, it may not be detected by percussion on account of the proximity of a flatulent stomach. Under similar circumstances a marked amphoric respiration is produced, with metallic tinkling, leading to the erroneous conclusion that pneumo-thorax is present.

The respiration acquires its amphoric character by reverberating through the solid parts to the inflated stomach or bowels.

20. It cannot be determined by physical examination whether pneumonia have or have not supervened upon tubercles, although the prognosis in the two cases would be very different.

21. I doubt whether physical examination can in any instance determine, with certainty, the existence of simple tubercles in the lungs.

22. When serous effusion is very considerable, giving rise to unequivocal bronchophony, tubular respiration, and want of resonance and vocal vibration, physical examination has repeatedly led to a mistaken belief that these signs resulted from pneumonic or other consolidation of the lung.

23. When a patient presents himself with febrile affection of any kind, we may, on examination, detect dullness on percussion, tubular respiration, bronchophony, and a râle not distinguishable from the submucous crepitation commonly observed in pneumonic hepatization; and yet physical examination shall not enable us to determine whether the chest affection be recent or of ancient date. When a portion of lung has been compressed by pleuritic effusion, and has been prevented from expanding again by adhesions, the physical signs may remain permanently, and be found to resemble precisely those which result from recent pleuro-pneumonia.

24. Experience leads me to the conclusion that pleuritic friction-

sound cannot in all cases be distinguished from the rubbing produced between the inflamed peritoneal surfaces of the liver and diaphragm; neither can the croaking sounds produced in the bronchi be always distinguished from the pleuritic rub.

25. As simple pericarditis is rarely attended with pain, and as the other symptoms of that disease are equivocal, the physical signs are chiefly to be relied upon in forming a diagnosis. Nevertheless, when effusion has taken place to a certain amount the friction-sound commonly disappears, and auscultation fails to recognize the disease.

26. Enormous accumulations of fluid in the pericardium cannot always be distinguished from effusion into the cavity of the pleura.

27. When the pericardial friction-sound is single, auscultation may fail to distinguish it from a valvular murmur, especially if it be situated over the region of the valves.

28. The double pericardial friction-sound may be confounded with the see-saw murmur of imperfect aortic valves, and vice versa.

This question may be almost decided by the characters of the pulse alone.

29. A sound closely resembling a murmur appears sometimes to be produced by the stroke of the heart against a portion of lung interposed between it and the parietes of the chest. Under such circumstances auscultation may lead to the erroneous conclusion that the heart is diseased.

This sound is most commonly heard at some point at the edge of the left lung, and resembles the *bruit de rape*. It may occasionally be made to disappear by a deep sustained inspiration. The author thinks it may be identical with the sound described by Dr. Latham as present in phthisis.

30. Auscultation fails to distinguish an aortic murmur depending on organic change from one which results from other causes; neither can it decide whether what has been called a mitral murmur is organic or functional.

31. In certain diseases of the heart it is difficult or impossible to localise the murmurs with accuracy, however pronounced they may be.

32. Auscultation cannot distinguish the murmur of an aneurismal artery from the murmur produced by external pressure upon the vessel.

33. Physical examination does not enable us to distinguish congenital malformation from disease of the heart or large vessels. (pp. 1-36.)

Art. 14.—*Clinical Remarks on Typhoid Pneumonia.*

By M. Greneau de Meussy.

(*Gazette des Hôpitaux*, April 9, 1846.)

[The occurrence of a case of fever in the wards of the Hôtel Dieu, in which a previously unsuspected pneumonia was discovered after death, gave rise to the following remarks:]

Let us inquire what is the difference between primary pneumonia, that is to say, pneumonia occurring without any other appreciable disease, and secondary or consecutive pneumonia. Consecutive pneumonia is generally a most insidious disease, and arises and makes considerable progress

without giving rise to any particular symptom. The initiatory rigor, so much insisted upon by pathologists, as well as the pain in the side, is usually either entirely wanting, or is so slight that it escapes the attention of the physician. Dyspnœa, greater than is to be accounted for by the febrile condition of the patient, is in general the only rational sign which is presented,

Nevertheless, by auscultation we shall find either the crepitous râle, or, if the disease is more advanced, bronchial respiration and bronchophony; we must, therefore, in doubtful cases, have immediate recourse to the stethoscope, if we would recognize the disease at its commencement. But there are certain cases, of which the present is an example, in which the greatest attention to the physical condition of the chest fails to detect any abnormal sound; in these cases it is probable that the pneumonia is central, and will only be recognized as the inflammation extends to the surface.

In some instances the invasion of pneumonia is announced by a sudden increase of prostration, with an alteration in the features expressive of anxiety and emaciation. However full the pulse may have previously been, it becomes small and thready. There is also occasionally quiet delirium, or a state of adynamic somnolence, which shows itself suddenly during the progress of the fever. This is the form of pneumonia to which authors have applied the term *latent*, but the term is in truth misapplied; for though certain symptoms are absent, the auscultatory signs are in most cases as marked as in the ordinary idiopathic disease. What we have said in reference to the pain applies also to all those symptoms for the manifestation of which a certain amount of sensibility and vital power is necessary. The cough and expectoration, for example, are less marked in patients who are delirious or extremely exhausted, and the physician is in such cases deprived of a valuable diagnostic sign.

It must be stated also, that it is rare to find the physical signs of typhoid or secondary pneumonia as distinctly defined as in the idiopathic form of the disease. For instance, the crepitous râle is composed of larger and less equal bubbles, and is often masked by other râles, as the sibilous or sonorous; a valuable diagnostic sign exists in the extraordinary heat of skin, and in a general increase of febrile symptoms.

[In speaking of the treatment of this adynamic form of pneumonia, the lecturer remarks upon the impossibility of having recourse to depletory measures, and the necessity of caution in the use of the ordinary internal remedies for pneumonia, as tartar emetic, in consequence of the irritable, or inflamed, or ulcerated condition of the alimentary canal sometimes present in these cases. He very properly relies chiefly upon counter-irritation, with the guarded exhibition of tartar emetic in small doses.

The lecturer omits to mention a very necessary part of the management of these severe cases, namely, the exhibition of nourishment, and in some cases of stimulants.]

Art. 15.—*On the Treatment of Pneumonia.*—By Dr. Anthony Todd Thompson.

(*Lancet*, August 22, 1846.)

[The writer's object in the following remarks is to examine the comparative advantages of treating pneumonia with bleeding, and with antimony, with or without mercury. In regard to the former, while he acknowledges its utility when employed with moderation and at an early period of the disease, he deprecates profuse and repeated bleedings as positively hurtful. He denies that it is ever beneficial when solidification of the lung has taken place, but on the contrary, asserts that it only quickens the circulation, and hastens the disorganizing process. He declares his conviction that the repeated use of the lancet may generally be rendered unnecessary by the judicious employment of tartar emetic. His practice is thus developed:]

My practice, as soon as I have fully satisfied myself of the existence of the disease, and if the attack has not run on to the second stage, is to order one bleeding to the amount of sixteen or twenty ounces; to follow this immediately with three or four grains of calomel and one grain of opium, with the view of preventing that nervous irritability which often succeeds the use of the lancet, and of sustaining the beneficial impression made on the system by bloodletting. In two hours afterwards I give one grain of potassio-tartrate of antimony, in a fluid ounce and a half of emulsion of bitter almonds, and repeat this dose every third or fourth hour, until a decided diminution of inflammatory action takes place—that is, until the crepitation has nearly disappeared, and the sputa are no longer rusty and tenacious. The intervals between the doses of the tartar emetic are then extended to six hours, and afterwards to eight hours, and so continued until convalescence is confirmed. I prefer the bitter almond emulsion on account of its containing hydrocyanic acid, which has a sedative quality, and a more decided influence in quieting the nervous system, and abating the cough, than small doses of opium. When the pneumonia is uncomplicated, this plan, with the occasional aid of some mild aperient, has, in my hands, seldom failed to carry the case to a successful termination. When the attack has passed the first stage, when dullness on percussion indicates hepatization, then the object of the second indication—namely, to excite the capillaries and prevent further depositions—requires attention; and, in order to fulfil this indication, I order four or five grains of mercury with chalk, or one grain of calomel, to be given in each interval of the administration of the tartar emetic. In the statistical table, twenty-three out of the thirty-eight cases were treated with mercurials in addition to the tartar emetic, because, in hospital practice, the patients are seldom brought in until the disease has progressed, and the solid effusion, if I may employ such a term, has taken place. But in the remaining fifteen cases no mercurial was employed, the tartar emetic was alone trusted to, and it did not disappoint my anticipations; but in no instance was its employment commenced until after the abstraction of blood, either by the lancet or by cupping. I have never carried the mercurial action to ptyalism; but

it is requisite to procure the usual symptoms of its decided impression on the habit, by producing slight tenderness of the gums. In ordinary cases I have seldom had occasion to order blisters; but, from the nature of hospital practice, they are demanded, and they were employed in sixteen of the cases in the statistical table. Such are the advantages of moderate doses of tartar emetic in the treatment of pneumonia. In the same manner as when larger doses are administered, vomiting almost always occurs after the first and the second dose of the remedy; but on the third dose the tolerance is established, and even when the dose is increased, neither nausea nor vomiting afterwards takes place.

[In reference to the *modus operandi* of tartar emetic, the author further remarks:]

If I may be permitted to state a hypothetical opinion, I should venture to offer my view of what has been termed the tolerance of the habit against the well-known influence of tartar emetic, when administered in moderately large doses. It has been supposed by Rasori and others, that the inflammatory state of the system in pneumonia is the cause of this tolerance, and that this would cease if the remedy were continued after every trace of general inflammation had disappeared. I am, however, of opinion, that the tolerance does not depend on the state of the habit, but solely on the topical influence of the tartar emetic on the mucous membrane; and upon its influence, also, on that membrane operating as a counter-irritant; and to this its beneficial effect in subduing inflammation is to be attributed. When a grain or more of tartar emetic is swallowed, a portion is carried into the circulation, and, acting on the nervous centres, it causes vomiting; but a portion also acts topically on the mucous membrane, and sets up subacute inflammatory action there. The second dose also causes vomiting, because the inflammation, although extended, yet is not sufficient to prevent absorption: but when the third dose is given, the absorption no longer takes place, and consequently no vomiting is induced. It is a well-established fact, that an inflamed surface is incompatible with absorption; and to this, in a great measure, are we to attribute the accumulation of serum in serous cavities in dropsy. If my views be admitted, I would further state, that the determination of blood to so extended a surface as that of the mucous membrane is, in my opinion, sufficient to relieve the congestion in the lungs; and that it is, in truth, the cause of the benefit which follows the employment of the tartar emetic. Such is my opinion of the rationale of the action of tartar emetic in pneumonia; but on this part of my subject it is not my intention to insist, my chief object being to demonstrate that this powerful therapeutical agent can perform all that can be expected from its administration in much smaller doses than Rasori and his followers have employed; that such doses incur no risk, seldom bringing on diarrhœa, whilst hypercatharsis has followed the administration of large doses; and that in such doses it sets aside the necessity of large and repeated abstractions of blood, and consequently cures the disease without that injurious impression on the habit which has been frequently seen to follow copious bloodletting. Another advantage obtained by this mode of practice in pneumonia is the gradual advancement of the convalescence, and the

restoration of the patient to health and vigour without the aid of tonics. By gradually letting down the action of the tartar emetic, the stomach recovers its tone, and the assimilating function rapidly restores any waste which the necessary treatment of the disease may have occasioned.

SECT. IV. DISEASES OF THE CIRCULATING SYSTEM.

ART. 16.—*On Sub-acute or Chronic Endocarditis.*

By WILLIAM MUNK, M.D., Physician to the Tower Hamlets Dispensary.

(*The Lancet*, Sept. 19, 1846.)

[Although from the attention with which diseases of the heart have of late years been studied, the pathology of acute inflammation of the endocardium, more especially as it occurs during the progress of rheumatism, is satisfactorily established, the same, however, cannot be said of the chronic form of the affection; of which it must be owned our knowledge is not commensurate with its importance. In the following essay Dr. Munk restricts his observations to endocarditis which is chronic from the commencement, passing over, without remark, those cases in which it is a sequence of the acute form of the disease, or is engrafted upon some other diseased condition of the heart. After a brief description of the anatomical appearances presented by chronic endocarditis and its connexion with disease of the valves and muscular structure of the heart, he proceeds to the further consideration of the disease in the following manner:]

The symptoms of chronic endocarditis, whilst the disease is in its early stage, and even when still uncomplicated by hypertrophy or valvular disease, are to a certain extent obscure and inconclusive. They are such as may result from various morbid conditions either of the heart or lungs. Abstractedly they have nothing strikingly peculiar about them; and individually they are valueless as regards precision of diagnosis. They only acquire a diagnostic value, and have a distinct signification, when regarded in connexion with the circumstances under which they have arisen, with what observation of their course and results in other cases has taught us, and in so far as we rigidly pursue the method of diagnosis by exclusion; by excluding—that is to say, one by one—the various diseases of the heart and lungs, with which, from similarity of symptoms, chronic endocarditis is liable to be confounded. The last is the most important element in forming the diagnosis, and it may in most instances be attained by the conjoint employment of auscultation and percussion. Chronic pericarditis seems to me to constitute the only exception to this statement—the only insurmountable difficulty, if proper vigilance be employed in the examination of the patient. It is satisfactory, however, to know, that here, where the means of diagnosis seem to be denied us, the distinction, in a practical point of view, is of little real importance. Both diseases demand the same general mode of treatment, and if within the reach of cure, require for that end the self-same means.

At a more advanced stage, when the disease of the lining membrane has become complicated by other lesions of the heart itself, there are likewise difficulties in the way of diagnosis. These, however, are of a different character from those just referred to. They are dependent on the secondary and induced diseases—namely, valvular disease or hypertrophy, the phenomena of which come now so prominently into view, as to obscure the feebler indications of endocarditis, and thus fix the practitioner's attention exclusively on the secondary lesion. This is a serious error. It may generally, however, be avoided, by a close inquiry into the origin and history of the disease.

The symptoms which point most unequivocally to the heart as the seat of morbid action are—frequency of respiration, excited action of the heart, frequency, strength, and sharpness of the pulse. With these, palpitation is sometimes, though by no means invariably, conjoined.

An accelerated and somewhat embarrassed state of respiration is one of the most constant symptoms of chronic endocarditis. It is often the only circumstance which induces the patient to seek professional advice; and it is not uncommonly the only symptom of which he complains on first coming under our notice. Its character and degree vary greatly in different cases; it is present, in a slight degree, even when the patient is perfectly at rest, but is considerably augmented by excitement, either bodily or mental. Percussion and auscultation fail to detect in the lung any circumstance to which the dyspnœa can be attributed; and we are hence led to the conclusion, that its source must be the heart—a conclusion, of the correctness of which the symptoms I have next to mention afford strong corroborative evidence.

The pulse is quick, more frequent, and stronger than natural; it will generally be found above 90, imparting to the finger a sensation of abruptness, and sustaining decidedly more pressure than is usual in a state of health.

The excited action of the heart itself is evident to the hand as well as through the stethoscope. The hand, applied to the præcordial region, is sensible of augmented action beneath; and on applying the stethoscope, the first sound is found to be louder and shorter than natural, and audible over a larger extent of surface. The impulse is stronger than usual, but wants the gradual, slow, and heaving character of simple and unmixed hypertrophy. The impression to the practised ear is rather that of excitement of the heart's action than of fixed organic disease; and all the stethoscopic signs are augmented by whatever tends to excite the action of the heart. The character of the first sound, and of the impulse, in these cases of chronic endocarditis, is somewhat similar to what we observe of the same signs in cases of slight hypertrophy with dilatation. In both, there is the same augmentation of impulse—the same loudness and shortness of the first sound. The author makes this comparison between the two cases, because the auscultatory phenomena of so common a disease as hypertrophy with dilatation must be perfectly familiar to every one; and being so, the comparison will, he thinks, afford a clearer idea than any verbal description it would be within his power to give.

But the results obtained from percussion are, according to the writer's experience, the most constant and uniform of all the phenomena attendant on chronic endocarditis. In every instance which he has had an oppor-

tunity of examining at an early period of the disease, there has been dullness over an extent of surface larger than in a state of health.

The above are the only phenomena adduced as guides to the diagnosis of chronic endocarditis. They mark its early and as yet uncomplicated stage. They are, it must be confessed, few in number, and far from definite, except when illustrated and explained by the mode of their invasion, and the previously diseased condition of the system in which they originate. If they occur after exposure to cold and moisture,—if they have been preceded by chilliness or rigors, and have at first been accompanied by more or less of pyrexia,—there are few practitioners who would hesitate to admit their dependence on inflammatory action, although they might hesitate in localizing that inflammation in the endocardium. But when we examine the chest, and find everything healthy as regards the lung, we are naturally led to ascribe the symptoms mentioned to disease somewhere situated about the heart. Having arrived thus far, these symptoms acquire increased value and a more definite signification, and may now, the author believes, be safely taken and interpreted as marks of inflammation of its lining membrane. When arising during the period of convalescence from acute rheumatism,—no matter whether the attack may have been mild or severe,—or in the course of Bright's disease of the kidney, any doubts as to the precise locality of the disease are materially diminished. We know full well the tendency of the endocardium in the former disease to take an inflammatory action; and we equally acknowledge, as a part of the pathological history of the latter, a liability to inflammation of serous membranes generally, and of the endocardium in particular as one of these.

[The tendency of chronic endocarditis is to valvular disease upon the one hand, and to hypertrophy of the muscular tissue upon the other. In its progress towards these, the general symptoms, but especially the physical signs, undergo considerable modifications. These the author now proceeds briefly to describe.]

If the inflammation has been chiefly or exclusively situated at the orifices, or upon the valves, the first sound will gradually lose its clearness, and as it does so, it generally becomes prolonged. It is next attended by slight roughness or hoarseness, and this, in turn, is eventually lengthened out, or converted into a bellows-sound. The author states that he has often known, in the progress of these cases, the first sound to be merely rough or hoarse when the patient was at rest, or under the influence of digitalis or hydrocyanic acid, whilst a distinct bellows-murmur was to be heard whenever the heart's action was excited by bodily exertion or any other cause. These phenomena announce a modification in the current of the blood in some part of the heart, and if we attend to the precise period at which the sound occurs, and the situation at which it may be most distinctly heard, we may determine with tolerable precision in what particular part of the heart it is produced. If it is best heard an inch or two below the left mamma, where the apex of the heart impinges, and is heard but faintly, or not at all, along and on either side of the upper portion of the sternum, the sound is produced by regurgitation through the mitral valve. If, on the other hand, the murmur is distinct along the upper portion of the sternum, and yet more, if it is audible in the carotid arteries, and is not at all, or but indistinctly, heard at the apex, we may safely conclude that the murmur is generated at the aortic

orifice. The pulse undergoes various changes, according to the seat of the valvular disease. When situated in the mitral valve, the pulse gradually loses strength, and becomes more frequent, and provided the regurgitation of blood be free, it acquires an irregular, unequal, and intermittent character. In aortic obstruction, the pulse usually maintains its regularity, perhaps acquires greater sharpness or abruptness, and diminishes rather than augments in frequency.

When the inflammation pertains more particularly to that portion of the endocardium which lines the walls of the ventricles, and the super-induced disease is hypertrophy, the phenomena of hypertrophy gradually take the place of those of chronic endocarditis. They do so, however, in a gradual manner, and the transition may usually be traced as follows: The first sound becomes less loud, but longer, and in place of being audible over a considerable portion of the chest, it can now only be distinguished at the præcordial region. The impulse loses the shortness and abruptness it presented in the earlier stage, and gradually becomes slow, heaving, and resisting, elevating the head of the observer distinctly, and giving to him the impression, that the more firmly he presses the stethoscope upon the præcordia, the greater is the power with which the heart elevates the chest. The second sound is somewhat diminished in intensity, although, when indistinct at the præcordia, it may often be heard in all its integrity, if the stethoscope be applied on either side of the middle and upper portions of the sternum, that is, immediately over the aorta and pulmonary artery. The rhythm of the heart's action is altered, the duration of its systole is augmented, and that of the period of repose diminished. The pulse loses its sharpness, but retains all its former power, or even acquires it in an additional degree. It is now strong, and lingers under the finger; it remains regular, except during paroxysms of palpitation, with which the patient now begins to be more or less frequently attacked. The progress of the disease, if unchecked by proper treatment, is peculiarly and characteristically rapid.

Bloodletting, either general or local, counter-irritants, and, above all, mercury, are, in the author's opinion, the only means by which chronic endocarditis can be efficiently treated.

He has never known bloodletting fail of giving relief when employed in the early stage of the disease; but such relief is temporary only, and the symptoms reappear, or regain their prior severity, after a short interval. The circumstances which appear to call for, or justify, venesection in these cases, are dyspnœa and hardness of the pulse. Dyspnœa, if severe, as it occasionally is, will be more certainly and promptly relieved by the abstraction of a few ounces of blood from the arm, than by any other measure. Hardness of pulse seems to call for the same proceeding, and as the case is becoming complicated with hypertrophy, we may very properly keep the force of the organ in check by venesections, somewhat smaller, however, in quantity, but repeated from time to time, as the strength of the pulse and the degree of impulse may indicate.

Local depletion, either by cupping or leeching the præcordia, is more generally applicable, and even more beneficial than venesection. The indications for its employment are the same as those just mentioned for the latter. It may be repeated according to the activity of the symptoms, and especially as the impulsion of the heart becomes abnormally strong.

From counter-irritants the author has generally derived marked advantage. Blisters, at an early stage, and interposed between the cuppings or leechings, and copious pustulation by tartar emetic ointment at a later period, when the necessity for depletion is subsiding, are important adjuvants, both in a curative and palliative point of view. They usually relieve, or may even entirely remove, the uneasiness in the præcordia of which patients not unfrequently complain.

But these means will not of themselves suffice for the entire removal either of the inflammation of the endocardium, or of the consequences it has entailed. Mercury must be administered, so as to produce a full and general effect upon the system; and this it is generally advisable to maintain for some weeks. The nature and course of chronic endocarditis, however, neither demands nor justifies its administration at the short intervals which experience shows to be necessary in the acute form of the disease. Our object is, to bring the system gradually under the mercurial influence, and so maintain it, with the least possible injury to the constitution, and with the smallest amount of pain and discomfort to the patient. Two grains of calomel, night and morning, may be administered until the gums and breath afford some evidence of mercurial action. The morning dose may be then withdrawn, and the two grains at night continued. This should be persisted in for a month or six weeks, and under such a course the symptoms and physical signs will, in favorable cases, be found gradually to abate, and the patient, with the exception of a sore mouth, some emaciation and debility, will be brought back into a state of health. If valvular disease has but recently supervened, and is not accompanied by hypertrophy, or by hypertrophy with dilatation, the plan of treatment now mentioned may prove sufficient for its entire removal. When, however, the muscular structure of the heart has become simply hypertrophied, as the direct result of disease of the endocardium covering it, further treatment is ordinarily required. After having subjected the patient to the treatment for chronic endocarditis, the more usual treatment for hypertrophy may be employed.

Art. 17.—*Researches on Tumours and Degeneration of the Auricles of the Heart.* By M. F. A. Aran.

(*Archives Générales*, Juin and Juillet, 1846.)

[It is certainly, observes the author of the following memoir, a somewhat remarkable fact, that while the diseases of the ventricles and valves of the heart have been so carefully and effectually investigated, the diseases to which the auricles are subject should have attracted so little attention. Two explanations, he thinks, may be given of this anomaly: the first is, that disease of these cavities are comparatively rare; the second, that the prevailing opinion of their identity of structure and unity of action with the ventricles, have caused the consideration of these disorders to be merged into that of the latter cavities. Feeling that the neglect with which the diseases of the auricles have been treated leave a hiatus in the study of pathology, the author endeavours in the following pages to do something towards supplying the defect.

In the present memoir the author limits himself to tumours and

degeneration of the auricular cavities and their parietes, limiting the acceptation of the term *tumour* to those enlargements of the auricular parietes which encroach upon the area of their cavities, and which originate either in a primary alteration of the walls themselves, or in the deposition in their structure of adventitious products. The "*degeneration*" of the auricles is only incidentally mentioned, in as far as it may be concerned in the form of tumour which such degeneration may contribute to form.

In his division of his subject the author investigates in turn the following varieties:—1. Aneurismal tumours. 2. Tuberculous tumours. 3. Cancerous tumours. 4. Hydatid tumours. 5. "Sanguineous fungous" tumours (fibrinous concretions).]

1. *Aneurismal Tumours.*—Considered in a general point of view, the auricles are no other than an expansion of the venous system; it is easy therefore to foresee that they will be subject to the same diseases. General dilatation of the auricles, from obstruction in some part of the circulatory apparatus, is very common, but partial dilatation, or sacculated aneurism, is rare. As in the ventricles, the formation of these partial dilatations depends upon the yielding of a portion of the auricular parietes, forming a pouch which communicates with the general cavity by an opening of variable size. Aneurismal dilatations of the auricles are always single; their size varies from that of a nut to that of an orange, or larger. Their seat is almost invariably immediately above the auriculo-ventricular opening, either in front or at the sides, never behind. In general the walls of the pouch are converted into a fibro-cellular substance, the lining membrane being at the same time variously changed, either wrinkled and opaque, or even ossified. The cavity of the aneurism is filled with coagula precisely similar to those which are seen in arterial aneurisms. From this it appears that aneurismal dilatations of the auricles are always of the variety known as *true*, or aneurism by *dilatation*.

We do not at present possess any definite knowledge of the causes of this form of aneurism. Mr. Thurnam attributes them to a narrowing of the auriculo-ventricular orifice; we cannot accord with him, but are more inclined to think, from certain cases related by Dionis, that they are liable to follow blows or other violence inflicted upon the chest. Neither have we any pathognomonic symptom of this lesion, and we agree with Mr. Thurnam, in thinking that it is difficult to distinguish it from general dilatation of the auricle.

2. *Tuberculous Tumours.*—It is a controverted question in pathology whether tubercular matter is susceptible of being deposited in the muscular substance of the heart. It is not doubtful to us, although it is confessedly a rare occurrence. [In a case related by Mr. Fenwick (see 'Half-yearly Abstract,' vol. III, p. 184), tubercular matter was deposited beneath the lining membrane, and also beneath the thickened pericardium, but none was found in the intermediate muscular structure.] It is less doubtful that tubercle may be deposited in the false membranes which follow an attack of pericarditis. It is very rare to find the parietes of the auricles entirely transformed into tuberculous matter, we have nevertheless met with two examples, one reported by Cruveilhier (Anat. Path. liv. 29), the other reported by Dr. Townshend (Dublin

Journ. 1832). In an instance related by M. Fauvel, tubercular matter was deposited in isolated patches.

It is not easy from so few examples to deduce a history of tubercle of the auricles, but it is right to conclude that its pathology is the same in this situation as when it occurs elsewhere; that is to say, that it may occur either in the form of infiltration or dissemination. The deposit of tubercular matter induces serious alterations in the muscular tissue, causing its atrophy or entire disappearance. We have no means of diagnosing the lesion, we can only suppose that, in a tuberculous subject, when pericarditis has terminated in adhesion, it may exist if the patient suffers subsequently with the symptoms of a chronic disease of the heart.

3. *Cancerous Tumours.*—Like tubercle, cancerous matter appears in the heart under two forms, the infiltrated and the disseminated. The first form is described by Bayle and Andral (Revue Méd. tom. i, 1824), and by M. Trelat, &c., who have seen the parietes of the auricles thick, and of a lardaceous consistence. The examples of the second variety are more numerous. M. Velpeau, M. Bouisson, Andral, and Dr. Kilgour, have each described cases, and Cruveilhier gives an instance in which a cancerous mass was developed in the interior of the right auricle.

It appears that cancerous degeneration of the auricles is generally of the encephaloid variety, and that the atrophy of the muscular tissue is the consequence of its deposition; the two laminæ of the pericardium are also constantly adherent over the situation of the deposit, but it is not clear whether it is that these adhesions are induced by the irritation of the cancerous matter, or whether they, being previously present, afford a favorable nidus for the dissemination of the morbid product. It is generally found that cancerous deposits exist simultaneously in other parts of the body, and particularly in the lungs. In some cases the auricles appear to be invaded by extension of the disease from neighbouring parts, as from the mediastinum. As in tubercle of the auricles, there is no sign by which cancer of the same cavity can be recognized.

4. *Hydatid Tumours.*—Of all tumours affecting the auricles these are the most rare; in fact, there are but two well authenticated examples on record: the first, reported by M. Dubreil in the 'Ephémérides Médicales de Montpellier,' 1826, is that of a man aged 56, who had never complained of the heart, but in whom several *cysticerci* were found beneath the endocardium in the right auricular appendix; the second, noticed by M. Depaul, is the case of a female, aged 23, who died of puerperal fever. Among other post-mortem appearances, a hydatid pouch was found at the posterior aspect of the left auricle, containing hydatids of various sizes. [M. Bouillaud relates three cases of hydatids of the heart, which the author does not appear to think to be of unexceptionable authenticity.]

5. *Fungous Sanguineous Tumours.*—[By this term the author has chosen to designate the fibrinous concretions which may develop themselves in the interior of the auricles as well as in the other cavities of the heart. Although the interior of the auricle is generally the seat of these species of growth, it does in some very rare instances spring from the exterior. The author relates a case of this kind, in which the tumour projected between the second and third ribs on the left side, becoming visible to

the eye, and possessed an impulse and bruit which caused it to be mistaken for aneurism. The remainder of this section is taken up with the description of the greater number of cases of polypus of the auricles which have been placed on record, beginning with an observation by Burns, 1809, and ending with one by Mr. Wilkinson King, as recently as October of the last year. From an analysis of these cases the author makes the following general observations :]

These tumours are ordinarily pyriform, and their aspect is sometimes uniform, at others uneven and lobulated. Their volume varies from that of a partridge's egg to that of an orange. They are in general pediculated, and their usual attachment is near the foramen ovale. As regards consistence and colour, they are sometimes gelatinous, and a yellowish or deep red hue; at other times they more nearly resemble a fleshy polypus, or a fibrous tumour. Their surface is invariably (as far as the observation of the before-mentioned cases is concerned) covered by an expansion of the lining membrane of the auricle.

These tumours held different relations with the corresponding auriculo-ventricular opening in different cases. In some instances they penetrated completely into the ventricle, in others they simply came into contact with the mitral valve. In both cases this valve was more or less altered, being either enlarged or contracted, opaque and indented. The auricle itself is constantly dilated and hypertrophied, as is also the corresponding ventricle.

If we seek to determine the circumstances which favour the formation of these growths, we remark, that in seven cases, four occurred in men and three in women, and at all ages in both sexes. All the subjects presented the ordinary symptoms of diseased heart, such as palpitation on exertion, dyspnœa, lividity of the countenance, &c. Auscultation was carefully performed in only three cases; in two of these there was a supplementary bruit between the two normal sounds; in another there was no evidence beyond that of insufficiency of the mitral valve, i. e. a "bruit de soufflet" with the systolic sound, the maximum intensity of which was at the apex of the heart and to the left. From this we learn that there are no certain signs of the existence of a polypus of the auricle.

[In speaking of the nature of these tumours, the author regards them as fibrinous deposits from the blood, which subsequently become organized. He does not explain the remarkable feature in their production, that they are almost always attached to the borders of the foramen ovale.]

ART. 18.—*Researches on the Symptoms and Diagnosis of Aneurism of the Aorta.* By the late GEORGE GREENE, M.D., Queen's Professor in the School of Physic, Ireland. Edited by SAMUEL GORDON, M.D.

(*The Dublin Quarterly Journal*, August 1846.)

The purpose of this communication is to consider the individual symptoms, physical signs, and other circumstances, of a number of cases which fell under Dr. Greene's immediate observation. With one exception all were instances of sacculated aneurism. arising from the posterior

wall of the aorta, and the symptoms, as will be seen, were very similar in all. Ten of the cases occurred in males, and two in females. Seven, or two thirds, occurred at or beyond the 40th year; two at the early age of 27 and 30 respectively, and one at 62. Five of the men admitted that they had lived intemperately, and had frequently been salivated for syphilis. In two cases only could the aneurism be traced to the direct effect of a blow, but the author thinks that such a cause might have oftener have been in existence, but overlooked from having been received during a state of intoxication.

Several of the patients stated that the first symptoms of the disease came on gradually, and without failure of the general health in the first instance. This, observes the writer, is different from the case of malignant intra-thoracic tumours, in which the local symptoms are often consecutive to a deranged condition of the digestive and nutritive functions in general, as is indicated by the peculiar aspect of the patient. In disease of the heart there is more analogy with thoracic aneurism, as in both the prevailing expression is that of suffering, with an undefined feeling of anxiety and alarm. In disease of the heart, however, œdema of the eyelids and lower extremities, and other marks of obstructed circulation, are more developed than in aneurism.

Although aneurism may exist in the chest without betraying its existence by any external indications, the writer has usually noticed certain symptoms which may lead to a correct suspicion. Among these he enumerates a knotty and congested state of the veins of one or both extremities, or of the superficial veins of the chest. This appearance was witnessed in eight of his cases. He makes the remark in reference to this appearance that the more localized and limited the congestion, the greater is the probability of its dependence, as in aneurism, upon the obliteration of a single trunk. If it be very general or unlimited, it may depend upon disease of the heart.

As in the case of other intra-thoracic tumours, aneurisms of the arch interfere considerably with the motions of the chest. Dr. Greene has noticed most commonly a non-expansion of one side of the chest during ordinary or forced inspiration. This invariably depends upon compression of a bronchus, and is, therfore, according to Dr. Greene's observations, more frequently seen on the left side, the left bronchus, from anatomical considerations, being more exposed to pressure.

But the absence of motion in a particular portion of the thoracic walls is not the only phenomenon which may be observed. Dr. Greene affirms that the presence of an *abnormal* motion may be discovered very early in the disease. He uses the term abnormal motion in preference to impulse, which implies the notion of a shock at once visible to the eye and sensible to the hand. An aneurism, however, may exist without producing this kind of impulse; but it is rarely, according to Dr. Greene, that a diffused expansive motion is not perceptible under the upper portion of the sternum, or above or below the clavicles. It was observed in 8 out of 12 cases referred to, in some accompanied by a distinct shock.

Excepting in two instances, no œdema of the upper extremities existed, which was not referrible to a coincident valvular disease of the heart; the author, therefore, lays it down as a general rule, that general anasarca will not serve to distinguish between aneurism and valvular disease.

With this general survey of the principal phenomena of aneurism of the arch, the author proceeds to a more particular consideration of the individual symptoms, and first of

Dyspnœa.—This existed to a greater or less degree in all his cases, and in some was the most distressing symptom. The increase was gradual, until at length complete orthopnœa ensued. At night paroxysmal attacks of suffocation were common. The great frequency of this symptom arises from these causes:—1. Pressure on the trachea or its principal divisions. 2. Pressure on the pulmonary arteries or veins, or upon the auricles. 3. From pressure or stretching of the pneumogastric nerve or its branches, especially the left pulmonary plexus. 4. From mechanical impediment to the expansion of the lungs from enlargement of the sac. The dyspnœa is, of course, greatly aggravated by coincident disease of the pulmonary tissues, as tubercle, emphysema, &c.

Although impeded respiration is so frequent a symptom of aneurism of the arch, it is not possible to fix upon any characters which indicate to a certainty its dependence upon that cause. The author states the following facts concerning the dyspnœa as observed in his cases:—1. It was invariably present, and the paroxysms were violent. 2. These paroxysms chiefly occurred at night. 3. They were produced, in most cases, by lying on the back. 4. They were independent of atmospheric changes. 5. Their duration did not in any case exceed two hours. 6. They were sometimes induced by attempts at deglutition.

In eight of the twelve cases inspiration was accompanied by a stridulous sound. Inspiration was prolonged and the sound raucous. It was sometimes audible at a short distance from the patient. The author states that he has never observed the patient to complain of a sense of constriction at the spot where the bronchial tube is compressed, as occurred in a case related by Andral. He further makes the important remark that the intensity of the stridulous sound is greatly diminished by hemorrhage, whether spontaneous or by venesection, and thus accounts for the occasional disappearance of the symptom before death, where the patient has survived a spontaneous hemorrhage.

The *voice* was modified in six cases; it was generally hoarse, but occasionally shrill, whispering, and interrupted. This symptom is said to be produced—1, by alteration in the capacity or torsion of the air-tubes; 2, compression of the recurrent nerves; 3, œdema of the glottis; but the author considers it difficult to assign the character which appertains to each of these respectively. On the whole, he is inclined to associate tremulousness and variation in the note, with indentation, displacement, and contortion of the trachea, feebleness of tone, with lesion of innervation, and atrophy of the vocal muscles, and the raucous voice with inflammation, thickening, and œdema of the glottis.

Cough was present in every case, and had, in all, a loud ringing, paroxysmal character; the paroxysm varies in duration, but is generally long and suffocative. Whenever expectoration was present it afforded no assistance in diagnosis.

Pain.—This symptom varied greatly both as to nature and severity. It was generally described as burning, or lancinating. At times it appeared to originate in the centre of the chest, and to radiate towards the circumference; in others, to shoot along the trachea, and towards the

shoulders. In some cases it was attended by palpitation, but not by excitement of pulse, or fever. This pain was intermittent, and was independent of atmospheric changes, but was readily induced by exercise. In seven cases in which the vertebræ were eroded, this pain was severely felt. In one, in which the sac had not induced erosion, the pain, though present, was not severe. There appears, therefore, to be a connexion between this pain and irritation of the sensitive roots of the spinal nerves.

It is to be recollected (as regards diagnosis), that irritation of the phrenic and pneumo-gastric nerves will be attended by similar pains, as when they are pressed upon by intra-thoracic tumours of other kinds, as enlarged bronchial glands, for instance. Cancerous masses enveloping these nerves will also produce pains, similar to those of aneurism. For this reason pain, though it may assist diagnosis, cannot be exclusively relied upon as indicative of aneurism.

Dysphagia existed in nine of Dr. Greene's cases, it is therefore one of the commonest symptoms of aortic aneurism. The exact spot at which the impediment exists, was referred variously to the right sterno-clavicular articulation, to the top and centre of the sternum, and in two cases to its inferior portion. In thoracic aneurism the stricture is deep-seated, but Dr. Greene remarked, that in such cases a spasmodic stricture often exists higher up in the œsophagus. The same symptom is also present in stricture from scirrhus, or other organic lesion in the lower portion of the tube, and is to be explained upon the principles of reflex action.

Dysphagia is a symptom subject to variation, being more marked some days than others; this doubtless depends upon a greater or less amount of accompanying spasm. In those cases in which the œsophagus had become adherent to the sac of the aneurism, swallowing was attended with pain as well as difficulty.

Pulse.—Dr. Greene divides the phenomena of the pulse into four groups. 1. Weakness of the pulse in one or both wrists, in comparison with the heart's impulse. 2. Pulse at the wrist later than the impulse of the heart. 3. Absence of pulse. 4. Visible pulsation of the radial artery.

The pulse was weaker in one wrist than the other in five cases, in three of which the left was the weakest. This agrees with the observations of Corvisart. Dr. Greene very properly observes, however, that no certain diagnosis can be derived from this symptom.

Retardation of the pulse was well marked in only one instance, but when it does occur, Dr. Greene considers it a more valuable sign than simple weakness in the beat.

Visible pulsation in the radial artery was noticed in one case, but the aortic orifice was patulous, it is therefore of no value as a sign of aneurism, the patulous condition referred to being, as Dr. Corrigan has pointed out, the only essential condition for its production. In enumerating the above symptoms, Dr. Greene places in the following order of frequency, viz. dyspnœa and orthopnœa; paroxysmal cough; terebrating pains; dysphagia; modifications in the pulse; modifications in the voice.

Physical Signs: Percussion.—Piorry and Gendrin (see Abstract, vol. I, art. 22,) are of opinion that an aneurism of the arch may frequently be detected in the early stage by percussion; Dr. Greene's experience seems to be to the same effect. In all his cases a dull sound was obtained under the upper half of the sternum, even where the aneurism

was not larger than an orange. The results of percussion were nullified in one case by the interposition of emphysematous lung. Upon the whole, Dr. Greene considers a well-defined and limited dullness under the upper part of the sternum as a sign of some value, as in the majority of instances he has observed it to depend upon true or false aneurism of the aorta. Percussion invariably gave pain, even where no tumour was to be seen. There may be some doubt as to the diagnosis, when tuberculization of the lung is present, as dullness on percussion may extend to the same region, but Dr. Greene believes that it is rare to see the coexistence of tubercles of the lung with aneurism, and thinks that the former may always be known by the internal signs of phthisis.

Auscultation.—The sound presented by the sac did not, in the majority of cases, amount to a distinct *soufflet*, when it did so, some coexistent disease of the aortic coats below the aneurism was observed to coexist. In most of the cases, the sound which could be with certainty referred to the aneurism, resembled the first sound of the heart, but could nevertheless be clearly distinguished from it. In other instances no *bruit* whatever can be perceived. [Dr. Barker has recently published two instructive cases of this nature. 'Med. Chir. Trans.' vol. x. New Series.] In these instances, Dr. Greene supposes it probable either that the sac is filled with solid coagula, or that a portion of fibrine plugs up the orifice. The sound may be modified also by the condition of the opening into the sac, but Dr. Greene is on this head only able to state, that where a *bruit de soufflet* was heard, the opening was round and smooth, and where a *bruit de scie* existed, the valves were found rigid from marked deposits. He therefore is inclined to regard a soft *soufflet*, the maximum intensity of which is under the upper third of the sternum, as more certainly indicative of aneurism than a harsh, grating sound. In some of his cases a loud *bruit* was heard in the interscapular region, and in this situation, as is remarked by Dr. Hope, became of great diagnostic value.

[By the following remarks it would appear that the author of this communication was familiar with the sign recently pointed out by Dr. Latham (see Abstract, vol. II, p. 213), as diagnostic of incipient phthisis, although he appears to localize the murmur in the aortic branches rather than in those of the pulmonary artery. He observes—]

"I have already remarked, that a soufflet, accompanied by impulse, is often observed in the arch of the aorta, or even in its branches, on the first deposition of tubercles in the lungs: it is, in fact, very common, and in the cases in which I have noticed it, the action of the heart was also strong, as if irritation was propagated from the seat of the deposit to the central organ of the circulation." He proceeds to say, in reference to the distinction of these cases from aneurism, "that in simple false aneurism, unconnected with disease of the heart, the soufflet and impulse, if present, are found to coexist with a natural impulse and sounds of the organ." The author also distinguishes between the chlorotic bruit and one arising from compression of the vessel by cancerous deposit.

"In cases, therefore," observes Dr. Greene, "in which the general signs and symptoms indicate intra-thoracic tumour, the occurrence of a bellows-murmur at a distance from the heart, can only lead to an inference that such a tumour exists, but cannot lead us to a knowledge of its nature." (*To be continued.*)

Art. 19.—*On the Localization of Abnormal Cardiac Murmurs.* By Dr. Todd, Physician to King's College Hospital.

(*Medical Gazette*, August 28, 1846.)

[In a clinical lecture upon a case of dissecting aneurism of the aorta, which is elsewhere described (vide Report, sect. Circulating System), Dr. Todd introduces the following observations upon the mode of discriminating the seat of the various cardiac "bruits."]

"The best modes of deciding the locality of these abnormal sounds are, firstly, to determine at what part of the chest they are best heard, whether over the sternum, at its junction with the third rib, or below the nipple, between the fifth and sixth ribs on the left side; secondly, to ascertain their relation to the normal systolic and diastolic sounds of the heart.

"If a sound be best heard over the sternum, and do not interfere with the normal diastolic or second sound, which is best heard in that locality, it is a systolic aortic sound unequivocally.

"If such a sound usurp the place of the normal, second, or diastolic sound, it is a diastolic aortic, or regurgitant sound, unequivocally.

"In the former case there is aortic obstruction, either from valvular disease or disease of the coats of the aorta, or there is an anemic state. In the latter case there is aortic regurgitation from valvular imperfection. If the sound be heard best at the apex, and if it accompany the normal systolic sound, interfering with it, or being itself interfered with by it to a greater or less extent, it is certainly a systolic sound caused by regurgitation of blood through the mitral orifice, accompanying the systole of the ventricle. The diagnosis of the true locality of this sound may often be assisted, if you detect it beneath the angle of the left scapula; but you must not trust to this alone, for a sound of this sort may be produced in an aorta rendered rough by many atheromatous and earthy deposits, and moreover a true systolic mitral murmur may and frequently does exist, although inaudible at the back.

"Mr. Sibson, of Nottingham, who lately visited this hospital, pointed out to me a simple way of analysing a mitral systolic bellows-sound, so as to distinguish the murmur from the normal impulse-sound. This is merely done by interposing a card, or a very thin piece of wood or ivory, between the stethoscope and the chest. By this arrangement you may frequently hear the murmur alone, distinct from the impulse-sound.

"You will sometimes, but not often, have to make the distinction between a bellows-murmur in the mitral orifice, which is systolic, and one which is diastolic. I say not often, for the latter kind of murmur is of very rare occurrence; a fact which is, I think, partly explained by the feebleness of the contractile power of the auricle. It is, therefore, only in cases where the mitral orifice is reduced to a very narrow chink, and where there is at the same time considerable hypertrophy of the auricle, that you meet with a bellows-murmur. This murmur is synchronous with the ventricular diastole, and therefore is called diastolic.

"How are you to distinguish this murmur? The best rule I can give you is to discern its relation to the systolic impulse; if it clearly occurs at different times, if you find the bellows-sound appear to terminate in

the impulse-sound, if, in addition, you gain no assistance in analysing the two sounds from the method proposed by Mr. Sibson, you may set this sound down as a diastolic one."

Art. 20.—*Case of Dissecting Aneurism of the Aorta.*

By W. H. Ranking, M.D.

(*Provincial Medical and Surgical Journal*, October 7, 1846.)

A man of intemperate habits, aged 57, came under the charge of the writer as an out-patient of the Suffolk General Hospital, in the following condition:

He was complaining mainly of pain in the frontal region, with a feeling of giddiness, and transient dyspnœa, but without cough. His appetite was good; his intellect undisturbed; bowels regular; pulse 70, regular, but feeble. He was able to lie with ease on either side, and in a perfectly supine position. The most remarkable feature in his case was an intense purple lividity of the face and neck, much increased by stooping or any exertion. The ears, in particular, were almost black and cold; the superficial veins of the neck and upper part of the thorax were enlarged and turgid. Anticipating from these appearances some impediment to the flow of blood in the descending cava, I examined the chest most carefully, as did also Mr. Newham, our house-surgeon, with the expectation of finding the evidences of aneurism or other tumour about the neighbourhood of the right auricle. The most careful examination, however, failed to detect any unnatural amount of dullness in that region, or any bruit or pulsation by which the existence of aneurism could be suspected. On the contrary, the great clearness of the sound on percussion led me to regard the lungs as emphysematous; a suspicion also countenanced by his previous history, he having been for several years subject to winter cough. The heart's action, though feeble, was perfectly regular and without bruit, until within a few hours of his death.

Finding, therefore, no stethoscopic indication of aneurism or other tumour, I was driven to the conclusion, that if such did exist, of which I entertained no doubt, it was masked by an emphysematous state of the lungs, a state which would of course negative the results of percussion. The treatment consisted of warmth externally, diffusible stimulants internally, and leeches to the mastoid processes. Under this treatment he improved sufficiently to come down stairs, which he did on the day of his death. The fatal event occurred instantaneously in the act of drinking. His body was examined fifteen hours after death.

On opening the thorax, the pericardium was found to be distended with semi-coagulated blood to the amount of a pint or more. In addition to this, both laminæ of the membrane were universally covered by a layer of soft fibrinous lymph, evidently of recent date, and deeply stained by the effused blood. The source of the hemorrhage was a small rupture at the base of the heart, at the precise point at which the pericardium is reflected upon the aorta. The parietes of the heart exhibited the fatty degeneration in an aggravated degree. The valves, with the exception of the aorta, were sound. Directly above, and on the outside of the pericardial sac, a globular tumour of the size of an orange was

observed, which had contracted loose adhesions with the inferior and inner portion of the upper lobe of the right lung, and lay upon and directly in front of the right auricle. This tumour contained layers of coagula, and communicated with the aorta by a triangular rent in its inner and middle coats, and also with the pericardium by the opening before alluded to. The aorta itself was dilated and thickly studded with atheromatous patches. The point of rupture was about two inches above the valves, on the inner concave surface of the ascending portion of the vessel.

These appearances, which denote the existence of a "dissecting aneurism" of the aorta, were at once a key to the symptoms during life, and an explanation of the sudden death. They were also strictly in accordance with the diagnosis formed, that an impediment existed to the entrance of the blood into the right auricle, for although the descending cava itself was not pressed upon, the free dilatation of the right auricle situated immediately behind the tumour was impossible. There are other circumstances, however, connected with the case which are deserving of remark. These are, the probable date of the rupture in the aortic walls; the non-existence of the aural signs of aneurism; and, thirdly, the unsuspected presence of pericarditis.

In reference to the date of the rupture, no satisfactory evidence could be obtained, as the patient did not complain until a few days before his death. It was plain, however, from the appearance of the coagula, and the inflammatory exudation connecting the sac with the lung, that the aneurismal tumour must have arrived at its present size some time previous to his fatal illness. Its interference with the due action of the auricle may be dated a fortnight back, at which time the livid turgescence of the patient's face was first noticed by his family. The rupture into the pericardium was of course the immediate precursor of death.

That the usual physical signs of aneurism were absent is probably explicable on two grounds: first, on account of the sac being nearly filled with clotted coagula; and, secondly, because, from the calibre of the artery being undiminished, and the artificial opening being in its ascending portion, there was, in all probability, but little active circulation in the aneurismal sac. The situation of the tumour would likewise prevent its pressing upon the bronchus, or more indirectly upon the œsophagus, and thus two of the most unequivocal signs of aneurism of the aorta, where they exist, namely, dysphagia, and diminished respiration in the left lung, were necessarily wanting. The situation of the tumour would likewise account for the similarity of the radial pulses. It may be stated, moreover, that the signs of aneurism are occasionally absent, even when the physical conditions for their production are plainly present. Such instances have been related by Dr. Barker, in the last volume of the 'Medico-Chirurgical Society's Transactions.'

We now come to the pericardial inflammation, which was likewise remarkable in being deficient in its characteristic, physical, and general symptoms. Although both pericardial surfaces were uniformly coated with lymph, there was no pain in the præcordial region, no tumultuous action of the heart, no friction-sound. Could the absence of the latter be due to the fatty condition of the organ, which might prevent its impinging upon the opposite membrane with sufficient force to give rise to the "rubbing" sound?

The cause of the pericarditis is also obscure, but it was most likely an

instance of inflammation, connected with a cachectic state of the system, and Bright's kidney, as pointed out by Dr. Taylor, of University College; though, as unfortunately, the kidneys were not examined, this is only a matter of inference, based upon the intemperate habits of the patient.

Dissecting aneurisms of the aorta are rare, the instances at present on record being under twenty in number. The lesion was first described by Laennec, and afterwards more fully by Rokitansky, who met with as many as eight cases. Isolated cases have subsequently been placed on record, and two of these quite recently, one by Dr. Todd (Medico-Chirurg. Trans. vol. ix), and the other by Dr. Thompson (Medical Gazette, April, 1846). In both, as in the present case, death was caused by rupture into the pericardium.

SECTION V. CHYLOPOIETIC SYSTEM.

Art. 21.—*Observations on the Post-Pharyngeal Abscess.* By Dr. Bessems.

(*Gazette Médicale Chirurgicale*, Mai, 1846.)

Post-pharyngeal abscess, or abscess behind the posterior wall of the pharynx, has not, till lately, drawn much attention from practitioners. Within the last five or six years, Fleeming, Moudière, Rodrigues, and Berard have published on the subject. This kind of abscess is either idiopathic or symptomatic; the latter is dependent on caries of the highest cervical vertebræ, and can hardly be mistaken. The idiopathic abscess, on the contrary, to which the following observations are limited, is sometimes difficult of diagnosis. This kind of abscess is confined to no period of life; but, as far as the cases hitherto recorded show, it is most apt to occur in early infancy, as from the age of a few weeks up to four years.

It has been observed to follow wounds or punctures, as from a wound of the back of the neck, and from puncture in swallowing a sharp-pointed bone, the irritation produced by a difficulty in deglutition, inflammation of the mucous membrane of the pharynx, dentition, and to have been connected with rheumatic disease, erysipelas, and also inflammation of the contents of the cranium.

It begins at different points in the posterior wall of the pharynx, and may be circumscribed or diffused. Above, the pus is confined by the petro-pharyngeal and occipito-pharyngeal aponeuroses, and in front by the deep layers of the cervical aponeuroses. But, notwithstanding the last-mentioned obstacle, the abscess sometimes extends to the sides of the neck, forming there tumours more or less voluminous. Beneath there is nothing to confine it, so that it may even descend along the gullet into the posterior mediastinum.

This kind of abscess may be either acute or chronic, the former being more frequent. In one recorded case, however, the disease proved fatal by suffocation, after lasting five months; and in another, which Desault cured by evacuating the pus, seventeen months had elapsed from the first appearance of the swelling; in a third, cured by Dr. M. Wade in the same manner, the patient had suffered severely from the disease for three months.

In the inflammatory stage, pain, not always severe, impeded deglutition; most frequently redness of the pharynx, great stiffness of the neck, and even projection of the posterior wall of the pharynx, are present. Sometimes this last symptom is better ascertained by exploration with the finger than by inspection. When the stage of suppuration arrives, besides the ordinary constitutional effects of suppuration, increased difficulty of deglutition, rejection of fluids by the nostrils, noisy breathing, cough, alteration of the voice, and even symptoms imitative of croup arrive. When the seat of the pus is low, the difficulty of discovering the tumour is great. By external examination of the neck, much assistance is often obtained, and a displacement of the larynx is at times discoverable.

The difficulty of the diagnosis is much increased by the tendency to disorder of the stomach and of the brain under this disease of the pharynx. In one of the fatal cases recorded, in an infant a year old, the disease set in with convulsions, and the true nature of it was not discovered till after death, though repeated examinations of the throat and neck were made, and it was discovered by the stethoscope that the lungs, bronchi, and trachea were free from disease. This disease was finally believed to be in the larynx, and tracheotomy proposed, which was refused by the parents. In this case the introduction of the finger would probably have discovered the nature of the disease in time to have saved the infant's life.

Nothing but an attentive examination of the pharynx can prevent this disease from being confounded with croup. In every case, then, resembling croup, the pharynx should be carefully explored, and this is more particularly necessary where no false membrane has made its appearance, or when the disease has shown the same intensity of symptoms for several days without a marked progress. In post-pharyngeal abscess the difficulty of deglutition precedes that of respiration, which is not the case in croup, as there is no difficulty of deglutition, unless where that disease is combined with cynanche tonsillaris; in post-pharyngeal abscess pressure on the larynx increases the labour of the respiration, which does not occur in croup.

It appears that this disease has been mistaken also for œdema of the glottis; but in the latter affection the difficulty of respiration, as compared with the facility of expiration, should be sufficient ground of distinction, since in the former both alike are impeded.

When post-pharyngeal abscess assumes the chronic form, numerous errors of diagnosis are apt to occur; it has even been mistaken for polypus of the nose. It is enough to indicate the possibility of such errors to prevent their recurrence.

In some cases the abscess opens, and the pus being discharged by the mouth, the patient recovers; in others suffocation takes place by the opening of the abscess; in others death occurs by asphyxia, owing to the compression produced by the size of the abscess; and lastly, in protracted cases, the fatal event is the consequence of defect of nutrition, owing to the interruption to deglutition.

When the abscess is recognized in sufficient time, and opened artificially, the patient seldom fails to recover.

The treatment in the inflammatory stage is obvious. Several methods

of opening the abscess have been recommended, as the nail, the finger, or the handle of a wooden spoon. A bistoury, wrapped round with linen, or Petit's pharyngotome is often necessary. In some instances the abscess has to be opened in the neck, in which case the surgeon must proceed with much caution.

ART. 22.—*Case of supposed Perforation of the Stomach terminating successfully.* By H. M. HUGHES, M.D.

(*Guy's Hospital Reports*, Oct. 1846.)

[The case which we here present to our readers in an abbreviated form is one of great interest. It is one of supposed perforation of the stomach followed by all the usual symptoms, ending in complete recovery. The patient eventually died of a second attack, when the correctness of the previous supposition was amply confirmed by inspection of the body after death. The case is as follows:]

Sarah C., aged 28, after the continuance of dyspeptic symptoms for some time, was suddenly seized with severe pain in the stomach, with symptoms of extreme collapse. Her countenance was expressive of great anxiety, extremities cold, pulse scarcely perceptible. She was sensible, but indisposed to talk. The abdomen was not tumid or tender, except in the epigastric region. Twenty minims of tincture of opium were given in water, and repeated. In an hour she was easier, though the extremities were still cold. She had retching, but no vomiting. At this time she was removed to Guy's Hospital, and is described by Dr. Hughes as presenting the following appearance:

The countenance was sunk and anxious, face pale, pulse 110, respirations short, abdomen tympanitic. Half a grain of opium was given in pill every three hours, and a few teaspoonfuls of toast-water occasionally. Besides this, no nourishment of any kind was exhibited by the mouth. She was desired to maintain the recumbent position, and on no account to move. The abdomen was covered with a linseed-meal poultice.

Under this treatment, with the addition of beef-tea enemata, she gradually improved, and about the ninth day she was allowed to indulge more freely in beef-tea; on the forty-eighth day she was allowed a mutton chop, and was soon after discharged at her own request.

Although in the present stage of the inquiry the fact of the perforation is only a matter of inference, it is, nevertheless, justly considered by the narrator as worthy of record. If perforation really existed, as was believed by all who witnessed the case, it is important in a pathological no less than in a therapeutic point of view. "If perforation did not exist it is equally important as exhibiting the precise manner in which the history and symptoms of that dreadful lesion may be simulated by some other unknown affection."

[There are several circumstances connected with the above case which are considered by Dr. Hughes as having contributed to the favorable termination, and which afford a valuable insight in the manner in which such cases ought to be treated.]

In the first place, the patient had taken nothing into her stomach for four hours at least before the occurrence of the acute attack, and then

only some gruel, easily digested and speedily absorbed; it is, therefore, probable that no food of any kind was present in the stomach, and therefore that none was effused into the peritoneum. In the second place, the medical gentleman who first saw her, at once suspecting the nature of the lesion, administered only opium in a small quantity of water. No stimulant or aperient medicine was prescribed, as has, unfortunately, too often been the case in similar attacks, none, therefore, could have escaped into the abdominal cavity.

In the after treatment "opium, quiet, and starvation, were the three remedies employed. The opium was given in moderate doses, and those doses were diminished as soon as the symptoms justified the reduction. For a period of eighteen days the patient was not allowed to move or be moved in the slightest degree from the recumbent posture. For a period of forty-eight hours the only sustenance allowed was two teaspoonfuls of toast and water given every hour. Before the expiration of that time she began to complain bitterly of thirst. It was then that an injection of five ounces of strong beef-tea, with a few drops of laudanum, was administered. These were afterwards repeated three times a-day for twenty-seven days. She was not allowed any solid food till the twentieth day of her attack."

[The sequel of this interesting case is the subject of another communication by Mr. Hilton, in the same volume (p. 343). It appears that about three months after her first attack she was seized in a similar manner, after eating freely of fruit. She was, as before, in a state of collapse, and *had taken brandy and water*. The opium treatment was had recourse to without effect, and she died in ten hours. The post-mortem appearances were as follows:]

The abdominal viscera were exposed, and in the recesses between them was found a considerable quantity of turbid fluid, containing portions of gooseberries, cherries, and strawberries, in addition to shreds of lymph. The stomach was joined to the abdominal parietes by old adhesions, as also to the liver in front of the smaller omentum. There were, besides, the effused products of recent inflammation.

The stomach presented a central constriction known as the hour-glass contraction, but not to an extreme degree. Air and fluid escaped, upon pressure, from amongst the old adhesions at the smaller curvature of the stomach, and discovered to us the abnormal opening about midway between the œsophageal and pylorie orifices. The surface of the liver was blanched by contact of the gastric juice. In the interior of the stomach was found an old cicatrix, from which the rugæ radiated. A recent ulcer was also found with rounded edges. About half an inch below the cicatrix was the perforation, the cause of death.

[In remarking upon these appearances, Mr. Hilton is inclined to refer the former attack to the same ulcer which had led to the fatal termination, and which had reopened, from the rupture of adhesions by distension of the organ supervening upon the ingestion of fruit. He does not think that the cicatrix was the remains of the previous rupture, as it did not extend completely though the coats of the organ. It was, therefore, probably the remains of an ulcer which had taken on a reparative action before it had extended to the length of perforation.]

ART. 23.—*Case of Peritonitis, with Clinical Remarks.* By Dr. CORRIGAN.

(*Dublin Hospital Gazette*, April, 1846.)

[The case here introduced by the lecturer is an important one in two points of view; it involves some disputed points of practice in reference to the treatment of peritonitis, and it shows that the most obstinate constipation, with fæcal vomiting, may depend solely upon intense inflammation, without the slightest mechanical obstruction. The point chiefly urged by the lecturer is the danger of giving purgatives in such cases, and the advantage of trusting to antiphlogistics as the best means of opening the bowels. The case is as follows:]

Patrick Carroll, aged 35, after suffering with wandering abdominal pains of no great intensity, was suddenly seized with excruciating pain in the right lumbar region. To this succeeded abdominal tenderness, constipation, and tympanites. He was bled and mercurialized, with the effect of improving his condition in every respect, and in a few days he was able to bear strong pressure on the abdomen without inconvenience. At this time he was ordered a whiskey gargle for the salivation, which he drank, and was soon as ill as before; the mercury was, therefore, continued, and leeches were applied, with the effect of again affording considerable relief, but in a few days he was admitted into the hospital in the following state. When first seen he rested in bed on his knees and elbows, groaning loudly, and apparently in great agony, and it was with much difficulty that he could be persuaded to turn on his back for the purpose of examining the abdomen. The principal source of distress was referred to the pelvic region at the lower and right side. Over the right iliac region the tenderness was very great, and extended up on that side as far as the liver. As the patient lay in bed the abdomen was remarkably tumid and projecting, from the umbilicus to the pelvis, while the portion above this, from the umbilicus to the ensiform cartilage, was rather flattened and depressed. The respiration was now accelerated, pulse 120, slightly compressible, bowels constipated; he stated that he had not passed urine for some hours, but it was drawn off without difficulty. The head and upper part of the chest were covered with cold clammy perspiration. Leeches were applied to the abdomen, and two grains of mercury, with a quarter of a grain of opium, given every third hour. Next day he felt better, the pain was gone, but the tenderness on pressure still remained; there had been some slight evacuation of fæcal matter. The whole umbilical and pelvic regions of the abdomen, particularly the right iliac region, felt swollen and tympanitic, and on pressing deeply in the right iliac region, a small tumour, apparently solid, was felt; an enema with the long tube was administered, but nothing passed from the intestines, fæcal vomiting then set in. The fæcal vomiting continued unchecked, as also the other symptoms, and the patient gradually sunk, and died on the 14th.

On turning up the abdominal flaps and looking to the pelvic region, all the small intestines lying in it were seen to be coated with lymph, and a quantity of plastic lymph ran in all directions among them, moulding itself into their interstices; the viscera, as they lay *in situ*, both in the true and false pelvis, being covered with a layer of the same substance. Passing to the right iliac

region, the cæcum was observed to be distended with air, and covered with a thick layer of lymph, which also extended round the junction of the ileum and caput coli, from a quarter to half an inch thick, and constituted the solid tumour that had been felt during life. The cæcum was adherent by a very thick layer of lymph to the abdominal peritoneum, in raising of which numerous bloody dots were observable. As the viscera were traced up along the right side as high as the liver, they were found covered with lymph mixed with sero-purulent fluid. The entire intestinal canal, it should be remarked, was also slightly distended. The lecturer drew attention to the line of demarcation which bounded these pathological conditions. As the large intestine was traced up from the cæcum it was found, after a few inches, to lose all trace of inflammatory action, and all the ascending, transverse, and descending portions of the colon were equally free from it. The sigmoid flexure was in a similarly healthy state, but the rectum was covered with the same lymphy layer which invested the small intestines. The stomach, left lobe of the liver, the duodenum, and jejunum, were all perfectly free. The mucous membrane throughout the whole intestinal tract was perfectly healthy, not alone in the upper portion of it, but even in that part of the ileum and colon on which lymph had been shed to nearly the depth of half an inch. Round the outside of the portion of the cæcum into which the ileum projects there was the deposition of lymph already described, but no mechanical obstruction whatever existed. There was no mechanical obstruction whatever, in proof of which observe this important fact—that there was a quantity of healthy fæcal matter, of a pasty consistence, not only in the ileum, but some amount of the same material scattered along the whole course of the colon. The deposition of lymph around the cæcum, though communicating to the finger a solid feeling when pressed deeply, had not been productive of any obstruction, yet the patient had iliac vomiting and obstinate constipation. [The lecturer thus proceeds:]

"We come now to the consideration of practical points in the treatment; and, first, let us inquire what the cause of the constipation is in the disease before us, and what should be its treatment. But, digressing just for a moment, I would remind you of what I said about this man having got a relapse from not having been careful, for it illustrates an occurrence very frequent in practice. It often happens that persons just after recovery subject themselves to relapses, from the imprudent use of stimulants, excesses in food, or taking purgatives. Nothing is more common than for a return of the disease to prove fatal under circumstances of this kind. Merely exciting the peristaltic motion of the intestines will prove sufficient, just upon the same principle that a man recently recovered from an attack of pleuritis would, by exercising the intercostal muscles, by blowing a wind instrument, produce a return of the disease; anything, in fine, that will produce excited action, or cause an attrition of the serous surfaces upon each other, may give rise to a relapse. Motion should be avoided here, in fact, with as much care as in an inflamed joint. But to return to the question of constipation and iliac vomiting—what gave rise to the obstinate constipation? and what is the treatment proper for you to adopt, suppose a similar case presents itself? The ideas entertained about constipation previous to the publication of Abercrombie's work were associated with the existence merely of obstruction in the intestinal

canal, in the removal of which the recovery from an attack of peritonitis was sought for. At a time when post-mortem examinations were not as frequent or as carefully attended to as they are now, such an inference naturally suggested itself at first sight, and it was consequently thought expedient to purge and procure free evacuations; but we now know that violent constipation is very often unconnected with any obstruction in the bowels, and to Abercrombie we are mainly indebted for the knowledge of the fact. A question which naturally suggests itself to us is—whether does the constipation, in these cases, and so strongly marked in the case before us, exist as cause or effect of the inflammation? for upon this our treatment depends. When upon the most careful examination of the whole canal we find its upper portion, including the stomach, free from inflammation, all being healthy, with the exception of some slight distension with air, when we find the ileum filled with pasty fæcal matter, and the same in the cæcum and remainder of the colon, and that neither by injection, nor any other means did the intestine act, or any portion of the contents of these several divisions of it advance along the tube in the slightest degree, though no obstruction existed—viewing, I say, this one case alone, even without the information given us by Abercrombie—we must inevitably come to the conclusion that the case is purely one of peritonitis, and that in the high inflammation we find the cause of the obstinate constipation. You will remember that all the intestines lying in the pelvis were covered with plastic lymph, and that the cæcum was in a similar condition. We cannot, I think, therefore come to any other conclusion than that the case before us was one of peritonitis, engaging the lower portion of the intestinal canal, which, by its influence on the muscular tissue in contact with the inflamed serous membrane, interfered with the peristaltic action of the intestinal canal, which was thereby rendered unable to pass its contents onwards. To this circumstance is the fæcal vomiting to be attributed, and the constipation likewise. You know it to be a fact in pathological physiology that there is an instinctive effort to keep at rest an inflamed part. You see it, as I before said, in the intercostal muscles in pleuritis; you see it in an inflamed joint. If then you come to the conclusion I have proposed, and I think that, uniting reasoning with the facts detailed, you can draw no other practical inference, it follows that treatment is not to be directed to efforts for overcoming constipation by the administration of acrid purgatives. Relieve the serous inflammation, and permit the peristaltic action of the intestines to return, but don't force it; look upon the constipation as effect, not as cause. Taking the theory in another point of view, of what harm is the presence of pasty fæcal matter in the intestine productive? We know it to be unirritating in its effects in the bowels of the child. Surely it cannot, then, be the cause of such mighty misehief as to require removal by the administration of croton oil, and such like drastic purgatives. Let the first object be, in treatment, to consider inflammation as the cause of the constipation, and to endeavour to remove it by the application of leeches, by blistering, and putting the patient under the influence of mercury; and recollect what I told you of the danger of a relapse from the use of stimulants of any kind. While we lay down these principles as our guide in treatment, it is not necessary, if I may use a vulgar phrase, to ride a hobby; accumulations may occur in the colon, their removal may be ob-

tained by the introduction, once or twice, of the long tube, as recommended by Dr. O'Beirne; but it is worse than useless to repeat this process often, and to attempt to force a discharge of the contents of the intestines. Suppose a man suffering under pleuritis, what would you think of the practitioner who would force the intercostal muscles of the affected side into action, and cause a rubbing together of the two sides of the inflamed membrane? Again, fancy the abdomen of a patient affected with peritonitis exposed to your view, with the cæcum and small intestines intensely inflamed, and that, while nature was doing her best to keep these parts in a state of rest, croton oil was thrown into the intestinal tube by one inlet, and stimulant injections through another. Surely this would be an error perceptible to common sense. Pay no attention then to the unirritating pasty fæcal matter lying in the intestines, but direct all your efforts to aid nature in subduing the existing inflammation by leeches, bleeding, blistering, and the administration of mercury; when the inflammation is subsided, the bowels will act spontaneously, or with the mildest aperients. I could relate to you several cases in which this plan was attended with the best success, where the purgative plan must certainly have been injurious."

Art. 24.—*Treatment of Intestinal Obstructions.* By M. Chomel.

(*Gazette des Hôpitaux*, 26 Mai, 1846.)

[The following remarks are the conclusion of a series of clinical lectures delivered at the Hôtel Dieu. The lecturer thus proceeds:]

The treatment of intestinal obstruction comprehends two different orders of remedial measures. In the first place, it must never be lost sight of, that inflammation of the peritoneum may supervene, whatever may be the original cause of the obstruction; this must be treated by the antiphlogistic means usually adopted, such as general and local bloodletting, mercurial frictions, &c. If, however, any strangulation should exist, this treatment, though necessary as an adjunct, will not suffice. We must at once endeavour to find the nature of the obstruction, a point in diagnosis at once difficult and important.

I suppose it to be pretty certain that there is obstruction of a portion of the bowel: the question presents itself, is it a strangulation or an invagination? As a help in deciding this question, it may be remembered that invagination to the extent of producing complete occlusion is seldom found, excepting where the small intestines fall into the larger. In such a case, therefore, it is in the right iliac fossa that we shall find great sensibility on pressure; as well as a tumour formed by the impaction of the bowel, and consequent accumulation of mucus.

When, on the other hand, there is only a simple strangulation, there is but little swelling; the strangulated loop of intestine may also retain its suppleness and sonorousness, characters which are absent in invagination. Strangulation may occur in any portion of the abdomen; invagination, on the contrary, seldom takes place but in one spot.

From these more or less determinate characters, sufficient information may be obtained to allow of an all but positive diagnosis, and therefore,

to enable us to devise an appropriate treatment, if we have to deal with a single strangulation, the treatment must be commenced by purgatives [?] as the peristaltic action so excited tends to withdraw the loop of intestine from its imprisonment.

Another and no less valuable resource is the application of ice to the abdomen. Several cases have been reported by a physician at Copenhagen, in which an internal strangulation was thus liberated. The *modus operandi* of the ice is the same as when it is used in strangulated inguinal or crural hernia.

There is still another method of treatment which appears to be specially indicated, where the small intestine becomes invaginated in the cæcum; I allude to the forcible enemata of cold water. It may be readily conceived that if anything can be of service in liberating the invaginated portion of intestine, it would be the distension of the containing bowel, and that nothing also will be more likely to push up the invaginated part than a jet of fluid forcibly thrown from below. The greater, therefore, the distension, the greater the chance of success. We have employed cold injections in many cases. One of the most remarkable of these was the case of a perfumer in the Rue Richelieu, who was suffering with all the symptoms of invagination. There was no convenient apparatus at hand, so we used a large syringe capable of holding several pints of water, the contents of which were six times injected into the bowel. In the space of twenty-four hours every alarming symptom had subsided.

In cases in which the strangulation is situated near the lower end of the intestinal canal, it has been proposed to restore the function of defæcation by the formation of an artificial opening in the lumbar region This operation, though severe, has been proved by M. Amussat to be a feasible one; the great objection is the disgusting infirmity which it leaves behind. Much of the inconvenience and annoyance is, however, to be obviated by mechanical contrivances and cleanliness, and the operation must, therefore, be considered as a precious resource in otherwise fatal cases.

Art. 25.—*Practical Observations on Diseases of the Liver.*

By Dr. Franz Schuh, Professor of Surgery, Vienna.

(*Wiener Zeitschrift*, Feb. 1846.)

[Under the impression that there is still much to be learned connected with hepatic disease, the author has thought fit to publish the observations made in more than 200 cases which have been presented to him in his own practice. He speaks in the first place of]

Congestion, or Hyperæmia of the Liver.—This is divided into active congestion (such as follows injuries to the organ itself, the evil effects of tropical climates, and irritation of the intestinal canal) and passive congestion, such as is seen to depend upon a sluggish transmission of the portal blood, obstruction of the bowels, or defective action of the heart. The symptoms of hepatic congestion are stated to be as follow:—In the active form, the liver is found by percussion to extend below the ribs, but can with difficulty be felt; there is a feeling of fulness and weight in the hypochondrium, with augmented secretion of bile, and in some cases

icterus; in the passive form, this latter symptom may be unaccompanied by fever.

Inflammation of the Substance of the Liver.—Inflammation of the substance of the liver, unconnected with abscess, is, in the author's opinion, extremely rare; what is generally called hepatitis, he regards as nothing more than inflammation of the serous envelope of the liver, and when bilious symptoms accompany this lesion, it is a sign that there is also congestion of the hepatic vessels. In some cases, inflammation of the vena porta, or the nutmeg liver, is mistaken for inflammation of the substance of the organ.

Inflammation of the Vena Porta, of the trunk of the vessel itself, or of a portion of its ramifications, terminates in one of two ways, either in obliteration of the vessel, or in suppuration. In the former case, the portion of the liver supplied by the obstructed vessel is more or less atrophied. The author recognizes two stages of phlebitis of the portal vein. 1. That of inflammation, indicated by fever, pain in the region of the liver and spleen, tumefaction of the liver, icterus, and vomiting of a slightly yellow fluid. The duration of this stage is from eight to twelve weeks, in part of which period the fever often assumes an intermittent character. 2. The stage of complication. In this stage the sensibility of the liver diminishes, and its circumference becomes less, in proportion to the number of branches of the porta which are obliterated; and the depression in the liver formed by the obliterated veins causes it to feel hard and uneven on its surface. The spleen increases in size, and is sensitive under pressure. In some cases there are short intermissions in the fever, especially when ascites arises, as readily becomes the case when the circulation in the vena porta is obstructed. This stage may last a month, or even a whole year; and in severe cases the patient either dies dropsical or by inflammation of the peritoneum.

Abscess of the Liver is either primary or secondary; in the first case it depends upon a circumscribed inflammation of the substance of the liver, in the second upon the so-called absorption of pus. The pus in either case may find different outlets, as, for instance, through the abdominal or thoracic parietes; through the intestinal canal, and in some cases the contents of the abscess burst into the bronchial tubes, and are expectorated. Secondary abscesses are for the most part situated in the inferior surface of the liver, and are superficial. The causes of primary abscess are a blow or fall upon the region of the liver, in which case it is formed rapidly. When the abscess originates in obstruction of the biliary ducts from calculus its progress is slower. The author denies *in toto* the assertion so often made in surgical writings, that hepatic abscess follows concussion of the brain; he believes that it can only arise as a symptom of purulent absorption from suppuration of the substance of the brain, or of the veins of the diploe. The symptoms of hepatic abscess from violence are in general tolerably distinct—inflammation of the peritoneum ensues, with bilious diarrhœa, icterus and hepatic engorgement. Upon the disappearance of these symptoms, together with the increased sensibility of the liver, there occurs about the fourteenth day shivering, with bilious vomiting and deeper icteroid discoloration. Hepatic abscess terminates in three ways—in recovery, in death, with symptoms of purulent absorption, or by slow wasting.

Yellow atrophy of the Liver is a lesion which, in respect of its symptoms, progress, and severity, is very similar to purulent resorption. According to Rokitansky, it is characterized by considerable diminution in the bulk of the liver, the cellular tissue of which is of a deep yellow colour, and tinged with bile. The blood of the vena porta is grumous, of a brownish red colour, and the coats of the vessel itself stained with bile; there is also more or less jaundice, and hydrocephalic softening of the cerebral substance. The author has observed this lesion twice during life; in both, the integuments were intensely yellow, and there were irregular exacerbations of fever, with feelings of general malaise: the blood drawn from the arm exhibited a yellow serum, with soft coagulum, and but little fibrin. The jaundice arrived at its greatest intensity in the space of two days. The tongue was dry and red, and the patient complained of a bitter taste. Death took place towards the end of the second week. The author leaves it undetermined whether the disease originated in some primary alteration of the blood, or in disease of the hepatic parenchyma.

Fatty Liver is considered by the author as one of the evidences of the tuberculous constitution, whether it occurs in drunkards, or in those who have not been addicted to drinking. It is declared by enlargement of the organ, without remarkable hardness, absence of pain on pressure, and pallor of the skin, especially if some other form of tuberculosis coexists with it. The appetite, appearance of the tongue and stools, are not materially altered. There is no fever unless some complication is present.

Nutmeg Liver is evidenced in the alternate and uniform distribution of a bright yellow and dark reddish brown colour throughout the substance of the organ. In the Vienna school it is considered to be either a minor degree of the fatty liver, or to depend upon enlargement of the capillary branches of the gall-ducts, with stagnation of the biliary matter. There are no definite symptoms by which this state of liver can be recognized.

Granular Liver is commonly seen to be combined with Bright's disease, and it most frequently occurs in drunkards, and in conjunction with diseases of the heart. The following are the most characteristic symptoms of the affection: the volume of the liver is in the commencement somewhat augmented; in consequence of the wasting of the left lobe, there is frequently no dull sound or percussion of left hypochondriac region, and the organ does not reach the boundary of the ribs; it feels hard on pressure, and is painful, especially if the atrophy is far advanced; the spleen is almost always enlarged, and ascites generally ensues; the stools are clayey, the urine high coloured; the skin has a slight yellow tinge, and the patient becomes rapidly emaciated. The progress of the form of disease is essentially chronic, and the patient eventually dies of dropsy or peritonitis, or gradual exhaustion.

Hydatids affect the liver more frequently than any organ of the body, and are commonly of the acephalocyst variety. Their presence can only be ascertained during life, when they have given rise to an external tumour, or are evacuated. The liver is often considerably increased in size, and of unusual hardness. As the disease progresses the tumour gives a perceptible fluctuation. In general the progress of the disease gives rise to

peritoneal inflammation, but in some instances recovery takes place by their external evacuation.

Cancer of the Liver is not to be distinguished by any symptoms in the commencement of the disease, when the cancerous tubercles are confined to the central parts of the organ. When it reaches the surface of the liver it is known by the often enormous increase in the size of the organ, the edges of which become greatly rounded and raised into uneven lumps, with a central depression. The tongue is clean, the taste unaltered; there is occasional nausea and vomiting, with but little fever; the countenance assumes the peculiar cancerous character. In the latter stages ascites is a common symptom. According to the author, the cancerous and scrofulous habits are mutually exclusive, but fatty liver is common in scrofulous persons, for which reason a combination of fatty liver with cancerous tubercles of the organ is never witnessed.

ART. 26.—*Treatment of Colica Pictonum.*—Dr. Gendrin, physician of the Hospital of La Pitié, whose researches on saturnine intoxication have attracted of late years much attention, states that colica pictonum, uncomplicated with cerebral symptoms, always yields in a short space of time, varying from three to six days, to the internal exhibition of sulphuric acid, in doses of 3 j. to 3 jss. daily, diluted in a quart and a half of water. The results of the treatment are not so rapid or so satisfactory where the skin is covered with a layer of metallic residues: these should be washed away with alkaline baths at the same time that the acid is given internally. M. Gendrin was led to the use of sulphuric acid by the knowledge of its chemical action on saturnine salts, which it renders insoluble, and therefore inert. He also thinks that the most efficient method which can be adopted to preserve the workmen engaged in the preparation of white or red lead from the disease, is to oblige them to drink two or three tumblers of sulphuric lemonade in the course of the day; to perform frequent ablutions of the hands and face; and to use in the factories a dress different from that which they wear out of doors. M. Bertini, physician of the Hospital of Saint Lazare at Turin, and MM. Priesso and Solari at Genoa, have obtained the most decided benefit from the application of Dr. Gendrin's method.

Medical Times, Sept. 12, 1846.

SECT. VI. DISEASES OF THE URINARY SYSTEM.

ART. 27.—*Living Animalcules in Human Urine.*

By E. J. SHEARMAN, M.D., Rotherham.

(*The Provincial Medical and Surgical Journal*, July 1, 1846.)

Thomas S—, saddle-tree maker, a pale, scrofulous-looking, tall, unmarried, sober and steady man, aged 28, consulted Dr. Shearman on the 12th of June. He was emaciated; exceedingly weak; pulse 90, and feeble; tongue furred, brown in the centre and white at the edges; no appetite;

no pain; no cough; often affected with diarrhœa, but the evacuations healthy in colour.

On examining his chest, Dr. Shearman found doubtful indications of incipient tubercular disease. The liver and stomach healthy. He complains of no uneasiness or pain in the region of the kidneys, and has no spinal tenderness. Passes urine in small quantities, but without difficulty or pain.

On examining the urine which he passed from after dinner to bed-time, and that which he passed when he rose in the morning, daily, Dr. Shearman found it of the specific gravity of 1·020 to 1·025, of a dingy amber colour, faintly acid, with a peculiar deposit of urate of ammonia in very small quantities. But there were in addition *myriads* of *animalcules* swimming about with great vigour in it, principally in three forms. One kind was almost a circle, with a little break in the circumference; another appeared like very minute earthworms—some much larger than others, but they twist themselves about into various forms, and are in great abundance; a third form appeared as if the body diverged into two tails. They were perfectly *unlike spermatozoa*, and appeared to be pretty nearly the same circumference from head to tail. Whether the round ones eventually merge into the long description Dr. Shearman cannot affirm, but he thinks it very probable.

Dr. Shearman has shown these living creatures several times to a medical friend accustomed to test the urine, who has been as much surprised at their appearance as himself.

There was no evidence of any disease in the spermatic organs or kidneys; the patient has never had syphilis, gonorrhœa, or disease of the bladder or urethra, and never been guilty of onanism. To prevent the possibility of imposition, Dr. Shearman *saw* this man pass some urine into a perfectly clear glass jar, which he immediately examined, and found exactly the same kind of appearances. Some of the specimens of the evening urine speedily became alkaline, and in this case the animalcules speedily perished; but the others remained the same as when passed for several days, and the animals are quite active in it.

It will very naturally be conjectured that the animalcules have been generated in the fluid from the effect of the hot weather; but Dr. Shearman has daily examined the urine of other patients, and has kept some specimens for weeks, and has examined thew hole of them, without finding similar animalcules. Moreover, these animalcules exist in the urine *when it is passed*, which proves that the atmosphere has nothing to do with it.

Art. 28.—*Case of Rupture of the Bladder, with Recovery.* By W. Chaldecott, Esq.

(*Prov. Med. Journal and Dublin Med. Press*, Aug. 17, 1846.)

The records of surgery exhibit so few instances of recovery after rupture of the urinary bladder, that probably the details of the following case may not be unacceptable, affording as they do encouragement, to both surgeon and patient, to hope under circumstances that have generally forbidden any other than the worst anticipations.

At twelve o'clock on the night of Tuesday, the 7th of April, Mr. John Philps, a wine-merchant in Dorking, a healthy and temperate man, about 50, having passed two or three hours at a concert, ran across the street to empty his distended bladder, and, the night being dark, he did not see a newly-erected post, with the top of which the lower part of his abdomen came in violent contact. He states that he fell, and with great difficulty reached his home, which was about a hundred yards distant.

Mr. Chaldecott saw him about half an hour after the accident. He was faint, and suffering severe pain over the stomach and belly, with desire but no power to pass his urine. It was ascertained that none had escaped into his clothes, and suspicions as to the nature of the mischief were confirmed by the circumstance of nothing escaping through a full-sized catheter which was passed easily and completely into the bladder. He was placed in bed, and hot fomentations were used to the belly until reaction took place, with which came increase of pain over the stomach and abdomen. Twenty leeches were also applied, and Mr. Chaldecott now passed a gum catheter, but with the same unsatisfactory result as before, not a drop of urine escaping through it. Mr. Chaldecott wished to have left the instrument in the bladder, but to this the patient strongly objected, and it was urged the less from some apprehension that in his restless movements the point might be forced through the wound in the bladder; the catheter was therefore passed every three or four hours, although up to two o'clock p. m. fruitlessly.

The friends of the patient being apprised of the nature of the injury, and the extreme danger attending it, Mr. Key was sent for. He arrived at six o'clock, which was about eighteen hours after the accident, by which time the symptoms of peritonitis had increased to an alarming degree. The belly was painful, swollen, and tender; the pulse rapid and feeble, and the countenance anxious. Mr. Key passed a catheter (none having been used for the previous four hours), and about an ounce of bloody urine came through the instrument. Mr. Key concurred with Mr. Chaldecott in his opinion as to the nature of the injury and the nearly hopeless prospect for the patient.

At ten o'clock the patient took half a drachm of liquor opii sedativus, which after a few hours produced some comfortable sleep, and about four hours from the time of Mr. Key's visit the catheter was again passed, and drew off about four ounces of clear urine. From this time, the pain, swelling, and heat in the stomach and abdomen gradually lessened, and it was evident that the bladder now held, as on each introduction the catheter brought away clear urine.

From this time until the 13th (that is the sixth day from that on which the accident happened) all went on well, excepting that a smart attack of gout occurred on the 10th, although the patient had never before suffered one; but on the 13th, from a strong desire to become independent of the catheter, he made straining efforts to pass his water, and he had scarcely passed a tablespoonful when he felt (to use his own expression), something give way, and a burning pain all over his stomach and bowels, as if boiling water had been poured over them, and the same symptoms of faintness and distress occurred as when the accident first happened.

He was seen within a few minutes of this reopening of the wound of

his bladder, for it could not be doubted but such had been the consequence of his attempts to pass his water. On using the catheter, not more than a teaspoonful came through the tube. He had now again the symptoms of peritonitis, with the addition of incessant sickness. The same plan of treatment was again adopted—viz., fomentations, leeches, and a full opiate, with calomel.

About four hours after, on the introduction of the catheter, the bladder was again found to retain the urine; and although the peritonitis had increased to a severe degree, the pain, tenderness, and sickness gradually subsided; and by a patient submission to the continued use of the catheter for a fortnight, no more interruption to the patient's amendment occurred, excepting that the gout, which, under the use of colchicum, had nearly disappeared, again became severe, no doubt from the fresh absorption of urine which this second accident had permitted to escape into the cavity of the peritoneum. By this time it was presumed that the wound in the bladder had closed with sufficient firmness to allow the patient to yield to the desire to evacuate his urine without any straining efforts.

Two months have now transpired since the commencement of the case, and he feels no other inconvenience from his accident except a dragging sensation over the abdomen, chiefly on the right side, which is much increased when he attempts to lie on his left side. This no doubt results from adhesions, consequent upon the peritonitis.

[The narrator of this remarkable case appends the following observations:]

The manner in which the accident happened, and all the circumstances and symptoms which followed it, were to me conclusive of the nature of the mischief. If anything could suggest a doubt about the rupture of the bladder, it was the very circumstance which makes the case remarkable, namely, the recovery; but to one who watched the case, no such doubt could occur, since it must be recollected that the bladder was known to be full at the time of the accident, no urine escaped into the clothes, nor did any come through the urethra for more than eighteen hours after, and then only about an ounce mixed with blood. If, therefore, it did not escape into the cavity of the peritoneum, what else could have become of it?

This case may range with many, in proof of what severe injury the peritoneum may sometimes sustain, and the patient yet survive. Indeed out of the evil of peritonitis, which usually renders this accident fatal, came the good of such an effusion of lymph as no doubt glued the bladder where wounded to the contiguous viscera.

The fact of gout occurring upon the absorption of the urine which first escaped into the peritoneum, and its aggravation upon its second extravasation, is interesting as connected with the pathology of that disorder.

Art. 29.—*Case of Congenital Malformation of the Bladder.* By Edward Daniell, Esq.

(*Provincial Med. and Surg. Journal*, 1846.)

— Pallet, an infant, was brought to me with a fungous tumour about the size of half an ordinary apple, situated immediately above the sym-

physis pubis, and rising upwards so as to involve in it, and totally obliterate, all traces of the umbilicus. It is of a bright red colour, tender to the touch, having its surface covered with rough granulated elevations, smeared with mucus. At the inferior margin of the tumour are two mamillary processes, projecting considerably above the other asperities: in the centre of these processes are minute openings, capable of being dilated, so that a probe introduced into either of them will pass with the utmost freedom until it becomes literally lost in the passages. By compressing the tumour with some force, it recedes into the cavity of the abdomen, but returns again with a sudden jerk the instant the pressure is removed. That it is exquisitely sensible is proved by the vehement crying of the infant whenever this pressure is applied.

The character of the case is obvious on the first glance, the anterior portion of the bladder is wanting, the mucous surface is exposed, and consequently there is no proper receptacle for the urine, but simply a membranous expansion, by means of which the urine escapes as fast as secreted. The mamillary processes are the open mouths of the uterus, through which the water passes sometimes by jerks, particularly when the child cries, and sometimes by mere dribbling.

It will perhaps be recollected by gentlemen present at the 12th anniversary of the Provincial Association, that Mr. Giles, of Stourbridge, exhibited an analogous case to the members assembled at Northampton. The patient was a young man 22 years of age. If you refer to the 13th volume of the 'Transactions' of this Association, you will find a very beautiful engraving of the case. The malformation in the child Pallet extends throughout the whole genital organs. The labia pudendi are cleft by the tumour at their superior point of union, and hang like flaps by the side of the tumour. I have reason to think there is no vagina, while the meatus urinarius, if it exists at all, is but a very minute orifice, through which no urine flows. It would almost appear, from the concluding passage of Mr. Giles's lucid description of his case, that he thought the one he exhibited unique, as far as this country is concerned, for he quotes from the Memoirs of the Academy of Sciences at Paris his other examples; but you will find, if you examine the English journals for the last twenty years, several such malformations recorded. Dr. Baillie, in his 'Morbid Anatomy,' makes the following statement:

"The anterior part of the bladder is occasionally wanting, and instead of it there is a very soft vascular flesh, situated externally at the lower part of the abdomen. This soft vascular flesh is usually formed into irregular projecting masses, and in the living body is covered with a thick ropy mucus. The two ureters open somewhat upon this vascular flesh, distilling gradually the urine upon its surface, which the mucus is intended to protect against the stimulus of that fluid. When there is such a formation of the bladder, I believe that there is always a deficiency of the bone of the symphysis pubis, and also a monstrous formation of some of the organs of generation."

Dr. Soper, of Ashburton, Devon, narrates in the 'Lancet,' 1829-30, vol. ii, p. 56), the case of a child born with a similar malformation, but the sex was so hidden that there appeared a difference of opinion between the parents and the doctor as to which sex it ought to belong; the former named the child Matthew, but Dr. Soper pronounced it a girl.

There existed a scrotum, and regularly marked raphe, but no testes; a glans penis, without a body or urethra. A sketch of the case accompanies the communication.

In the 'Lancet' (vol. xii, 1826-7, p. 30) is a beautiful description of an analogous case, admitted into St. Bartholomew's Hospital, under the care of Mr. Earle. I beg leave to quote it entire on account of the accuracy of its detail, and because it seems to furnish the generic characters of this species of malformation, allowing, of course, for the difference of sex.

"Mary Pratt, aged 10, of a frail form and debilitated aspect, was admitted into the Hospital on account of a fungous tumour on the lower part of the abdomen, through which the urine is involuntarily discharged. Upon examination it was found to result from a *deficiency* of the *anterior* portion of the *bladder*, while the posterior part of that organ is protruded forward through an aponeurotic expansion in the inguinal region, formed by the interlacement of the tendinous fibres of the abdominal muscles, so that, in fact, the interior surface of the posterior portion of the bladder forms the tumour seen on the external surface of the abdomen. The fungus occupies the region of the pubes, extending from thence to the usual situation of the symphysis, and is of the size of half an orange. On either side it is bounded by the recti muscles; its colour is red, and it presents a granulated surface. which is moist, and frequently covered with a thick layer of mucus; its sensibility is exquisite. From the inferior part of the fungus, and about equidistant from its edges, and from each other are seen two projections, mamillary processes or papillæ, denoting the termination of the ureters. From these the urine exudes *guttatim;* but, by the action of the abdominal muscles, it occasionally spurts out in a small stream. There is a depression around the edges of the tumour which, at its inferior part, forms a sort of triangular cleft, into which the urine exudes, the apex of which is continuous with the raphe perinæi. On either side of the cleft, and in contact with the fungus, are two small bodies, probably the glans clitoridis; the labia pudendi considerably recede from each other; the nymphæ, as likewise the meatus urinarius, are wanting. The ossa pubis are two inches apart, their spines being thrown forward from projections at either side of the protruded bladder; the bodies of the bones are connected by a ligamentous membrane, which forms the point of support for the viscera of the abdomen. The situation of the anus is rather more forward than natural, so as to diminish the breadth of the perinæum; the os coccygis is more than ordinarily incurvated; the vagina is pervious, but its calibre is only just sufficient to admit the passage of a probe. The umbilicus is so blended with the integuments at the upper edge of the protruded bladder, that scarcely any vestiges of it are traceable. As a consequence naturally looked for, resulting from the separation of the bones of the pelvis, is found a larger and flatter pelvis. The acetabula and thighs are separated further from each other, and there is considerable lateral motion, so that the combined effect of the many, consequent on one original cause, gives to the child a very staggering gait."

This case, allowing for the difference of age in the patients, is a perfect parallel to the one which I have brought before your notice, even to its very minutiæ, so that it would seem there is uniformity even in the errors of nature.

Six years after this Mr. Earle records another case in the 'Lancet,' (1842-43, p. 797), to which I must beg to refer you. This was a boy, but some slight variation in character was perceptible; for instance, in three parts it was covered by epethelium. Mr. Earle observes, that he had always thought mucous surfaces incapable of becoming cutieular, how ever long they might be exposed to atmospheric influence; but here seemed an exception to that rule, though he could not say whether the epidermoid appearance, in this instance, resulted from an effort of nature, to protect the delicate and exposed membrane, or was a congenital formation.

Art. 30.—*On the Connexion of Irritability of the Stomach with the Secretion of Earthy Phosphates by the Kidneys.*

By Golding Bird, A.M., M.D., F.R.S., &c.

(*Medical Gazette*, July 10, 1846.)

[The connexion of alkaline urine with injury of the spine is, as the author of the following remarks observes, one of the best recognized facts in pathology; but it is doubtful whether attention has been directed to the association of the same lesion with irritability of the stomach as cause and effect. That such an association, however, does exist is rendered probable by the following case.

George L., aged 18, of active and temperate habits, and previously general good health, was suddenly attacked with vomiting after dinner, accompanied with severe pains. With occasional, though rare, intermissions, the vomiting recurred daily after each meal for six months, being always preceded by intense pain. Subsequently the vomiting occurred but once in the twenty-four hours. On admission he was pale, and extremely emaciated, having the appearance of a person worn out by malignant disease. He complains of a burning pain in the scröbiculus cordis. The tongue is clean and red; pulse quick and sharp; he vomits shortly after each meal, and complains of intense thirst. Urine copious (fetid), loaded with crystals of triple phosphate, alkaline, not albuminous. He was ordered milk diet, with strychnine, gr. j, acid nitrici dil. ℥j, aquæ ℥xij; dose ℥j, three times a day. Under this treatment he rapidly recovered health and strength. In connexion with this case the narrator remarks to the following effect:]

Sickness, or rather continued and distressing nausea, has long been recognized as a symptom of the passage of a calculous concretion along the ureter. Dr. Barlow has adduced a large body of evidence in support of a proposition "that there is a certain symptom connected with irritation of the kidney, which, although not confined to it alone, is not necessarily connected with diseases of those structures, affections of which are likely to be confounded with those of the kidneys; so that when this symptom is absent, we may disembarrass ourselves of the consideration of all such affections of the kidney as would necessarily be attended by irritation of that organ; and when this symptom is present, we are furnished with a reason for assigning the seat of the disease to the kidney, in preference to several adjacent structures; the symptom alluded to being sickness, or rather irritability of stomach." The

cases recorded in Dr. Barlow's paper, in which the sickness was present, were examples either of organic disease of the kidneys, or of calculi impacted in these organs. It has since occurred to me to meet with many cases in which the copious excretion of uric acid, in the form of crystalline gravel, has been attended with analogous symptoms; but the one now related was the first that occurred to me in which the excretion of large crystals of the triple phosphate appeared competent to the production of a similar train of symptoms. I am not insensible to the possibility of a different induction being drawn from the phenomena presented by this case, for as, at the time of the lad's admission into the hospital, there were symptoms in the shape of gastrodynia, and a vividly red tongue, sufficiently urgent to warrant, in a *primâ facie* view, the idea of the stomach being primarily involved. To such a view I have only to oppose the fact of all experience being wanting to prove the coexistence of the extraordinary state of the urinary secretions with any gastric affection with which I am acquainted. In support of this I may be permitted to allude to the long continuance of the ailment, and its refusing to yield to the varied and persistent treatment directed by several careful and experienced practitioners, who, as far as could be learned, had made the stomach the chief object of attack. It is obvious that no argument can be drawn from the actual presence of gastric symptoms, as an erythismic state of the mucous membrane of the stomach must have been the necessary result of persistent vomiting, whatever might have been the originally exciting cause.

[The strychnia was administered in consequence of its well-known influence upon the spinal marrow, and its effects were most satisfactory, for the patient recovered the power of retaining his food, and the urine lost its alkalinity. Dr. Bird is anxious to impress the value of this medicine upon the attention of surgeons, in whose department cases of alkaline urine following spinal injury more frequently occur. He likewise suggests it, as likely to be beneficial in hysteric vomiting, as well as in the morning sickness of pregnancy.]

Art. 31.—*Observations on the Diagnosis of Bright's Disease, and its Relation to Albuminous Urine.* By G. O. Rees, M.D., F.R.S.

(*Med. Gazette*, July 17, 1846.)

[The intention of the author's present communication is stated to be, in the first place, "to direct attention to those symptoms which lead to the detection of Bright's disease, when the more common effects of that disease are either not prominently marked, or are altogether absent; and, secondly, to notice certain albuminous conditions of the urine, which must be distinguished from that form more especially connected with deranged kidney."

The attention of Dr. Bright was, as is well known, first directed to the subject of his discovery in its relation with anasarca, but Dr. Rees is anxious to impress upon the reader a fact which is frequently overlooked, viz. that the kidney may be subjected to all the gradations of the granular condition, without the supervention of that symptom. It is important, therefore, he observes, that those other symptoms which equally indicate

the peculiar disease of the kidney, should be familiar to the practitioner. His remarks upon this point are to the following effect:]

Now it not unfrequently happens that patients present themselves in whom the leucophlegmatic or anæmic aspect is strongly marked. They complain, perhaps, of having taken cold, and feel pain and dizziness of the head, with shooting pains in the loins and limbs. To these general symptoms, so often met with in ordinary colds and influenza, we do not find superadded the excitement of pulse, or heat of skin, noticed in such affections; on the contrary, the skin is often cool though dry, and this circumstance, if it be present in connexion with *nausea* and *vomiting* as a prominent symptom, should be sufficient to direct attention to the kidney, and may probably lead us to elicit, on further inquiry, a train of symptoms more or less confirmatory of the opinion that the kidney is in a diseased condition.

The additional evidence we meet with consists generally in the presence of the following symptoms: puffiness of the eyelids, either noticeable at the time of examination, or which may have been remarked by the patient during the first hour or two after rising from bed, but which disappears as the day advances. The urine will be described as clear, but passed at short intervals, and the patient will remember having been frequently obliged *to rise from bed to micturate.*

This latter set of symptoms should at once lead us to examine the urine, and we shall generally find, in such cases, that albumen may be detected in considerable quantities, and the progress of the case afterwards prove that morbus Brightii is present, possibly in an aggravated form.

[The above set of symptoms are given by the author as descriptive of an intermediate case as regards diagnosis. He proceeds to mention other less common symptoms which may lead to the suspicion of the existence of diseased kidney. For instance, inquiry may afford us the history of a long and severe salivation, supervening upon the cautious and moderate use of mercury.]

"The excessive action of small doses of mercury," remarks Dr. Rees, "thus often becomes a valuable guide for the detection of albuminuria, though it is a painful and injurious result for the patient, and one which no practitioner familiar with the disease would willingly bring about.

"There is a severe form of cerebral disease which occurs in connexion with the excretion of albumen with the urine, showing some peculiarities of a marked character, and to which the attention of practitioners was especially called by Dr. Addison, in 'Guy's Hospital Reports' for April 1839. This form of brain affection is characterized especially by the anæmic aspect of the patient, by a quiet pulse, and frequently only partial coma. If there be any stertor, it is of a peculiar kind, and characterized by a low hissing sound. These diseases are frequently attended with convulsive attacks, occurring at intervals. Paralysis is not necessarily present, and anasarca is generally absent. This kind of case has been much overlooked, at least as connected with disease of the kidney."

[The author here appends a case in illustration of the above form of cerebral affections. It is that of a man who was admitted in a semi-comatose state, but capable of being partially roused. He lay on his back, and vomited frequently. Motion and sensation of the left side are

impaired; tongue loaded; eyes staring and vacant; pulse 76; lungs healthy; heart's action somewhat excessive; liver enlarged; bowels constipated; urine scanty, high coloured, coagulated by heat and nitric acid. After some days' treatment the patient recovered sufficiently to give an account of himself, and related a history such as is constantly received from persons labouring under morbus Brightii. The author now proceeds to the second part of his subject, and describes various forms of urine containing albumen, noticing, especially, that which is characteristic of morbus Brightii. He assumes that in a given specimen of urine, the presence of albumen has been satisfactorily established, avoiding the consideration of the various sources of fallacy which appertain to each test. He states that urine may contain albumen, owing to the presence of pus, blood, serum of the blood, and to a small extent of semen.]

The presence of pus, which may be ascertained by the microscope, may be owing to an excretion either from the bladder, ureter, or kidneys, and urine which is albuminous from its presence is therefore in no way characteristic of granular kidney. It is not uncommon to find urine highly albuminous in cases of diseased bladder, and to find that it disappears as the deposit of pus decreases, and ultimately to find the urine free from albumen. This occurs only when the bladder alone is affected; for if the kidney be the subject of congestive or granular disease, we shall still observe the urine to be albuminous after the deposit of pus has disappeared; and it is by attention to this point that we are often able to determine that diseased kidney exists in addition to the more obvious disease of the bladder.

Urine often contains albumen, owing to the presence of blood. It is then either of a bright-red colour, or like dark porter. Both these kinds of bloody urine are occasionally observed in morbus Brightii, and chiefly in its early stages, but they are not necessarily characteristic of it.

Serous urine is not to be confounded with that which contains blood; it is free from hæmatosine, and the blood-corpuscles are seen only in very small numbers. The albumen is derived from the serum of the blood which passes from the kidney, to the almost total exclusion of corpuscles and fibrin.

When serous urine has been passed for a length of time, say for weeks or months, and treatment fails to remove the coagulability, we may conclude on the presence of kidney disease.

[The probability of a cure being effected in a severe case, or of its inevitably fatal termination, is a subject on which much difference of opinion exists; which difference the author thinks is to be attributed to the uncertainty or absence of signs by which we can determine upon the particular stage of the disease which is present at the time of examination; but it is, he observes, clearly proved by clinical observation, that the primary or congestive stage of the disease, accompanied by albuminous urine, may exist for a very considerable time without being followed by "granulation," and the patient may make a more or less perfect recovery under appropriate treatment.]

ART. 32.—*Treatment of Urinary Diseases.* By JOHN ALDRIDGE, M.D.

(*Dublin Hospital Gazette*, Jan. 1, 1846.)

Treatment of Diabetes Insipidus.—This is the name given to a symptom of urinary disease, in which an excessively increased quantity of water is habitually secreted from the kidneys, without any alteration of the solid elements of the urine. The specific gravity of this liquid becomes consequently very much reduced. This symptom appears to depend on altered innervation, and it is best treated by the internal use of antispasmodics and mineral tonics, with the external employment of stimulating liniments to the spine.

Treatment of Lithic Acid Deposits.—These deposits are either crystalline or amorphous. When the urine for any length of time continues to deposit, after each emission, the rhombic prisms of lithic or uric acid, this circumstance is an evidence that the kidney is affected with gout: under such circumstances the immediate danger is the formation of a calculus; and to obviate this it is desirable to exhibit either bicarbonate of soda or potash, in doses of ten grains or a scruple dissolved in half a pint of water, three times a day, so as to render the urine neutral or alkaline: but, this effect being obtained, the practitioner ought to direct his efforts to subdue the gout which is the cause of the symptom. If the urine be albuminous or sanguinolent, and there is much pain in the loins, it shows the attack to be of an inflammatory character, and to require a treatment locally antiphlogistic; otherwise recourse may be had to colchicum, or whatever remedy the practitioner prefers in the treatment of podagra.

If the lithic acid deposit be amorphous, its precipitation may depend either upon an excessive secretion of the solid constituents of the urine, or upon a deficiency in the secretion of water. In the former case the specific gravity of the urine becomes normally increased in proportion to its quantity; and this symptom is usually dependent on rheumatism of the kidney. The treatment should, of course, be directed to the rheumatism, at the same time it is desirable to hold the excess of lithates in solution by means of alkalies. Iodide of potassium is a medicine that fulfils both indications, and, given in doses of five or ten grains three times a day, will usually be found serviceable.

When the amorphous lithates become deposited from a deficiency of water, the quantity of urine will be ascertained, upon inquiry, to be less than usual. Sometimes, however, the patient is deceived as to this point by the concentrated and stimulating secretion, demanding frequent evacuation; under all circumstances it is most desirable, for diagnosis, that the daily discharge of urine should be measured. Diminution of the watery part of the urine may be produced by irritation of the kidneys, either idiopathic or symptomatic; or it may be the result of a lesion of innervation; or it may be the consequence of a vicarious watery secretion from some other organ. When the deposited lithates are of a brick-red colour, the scanty secretion of water which produces their subsidence is the effect of the first of these causes; in that case a fever, either essential or symptomatic, exists, and the remedies calculated to remove the fever

are those fitted to increase the urinary secretion and diminish the lithic deposit. If the deposited lithates be pale or buff-coloured, the chances are that they are caused by a nervous diminution of the watery element, connected with that weakened action of the ganglionic nervous system to which the name of dyspepsia is given; if such be the case, the internal exhibition of a scruple of alum in half a pint of water three times a day will soon remove the tendency to lithic acid deposit. A pink colour of the sediment is usually found in connexion with an imperfect discharge of the biliary functions.

Treatment of Phosphatic Deposits.—These deposits, when prineipally crystalline, generally depend upon the urine being deficient in acidity; in that case the treatment will be described under the head of alkaline urine. Sometimes, when the bladder has been long diseased, a copious deposit of amorphous phosphates subsides from the urine; it is always, under such circumstances, accompanied with pus; and the indications which are thus afforded for treatment I shall hereafter mention.

Treatment indicated by weakly Acid, Neutral, or Alkaline Urine.—If the urine be neutral or weakly acid, from a vice of secretion, it usually shows that the kidneys are inflamed. In acute nephritis the employment of local and general depletion, as well as the exhibition of emollients and contrastimulants, must be regulated by the severity of the disease and the state of the constitution, according to the ordinary principles by which inflammations are combated. I am persuaded that I have seen much benefit from large (ϑ) doses of hydriodate of potash in this disease. In chronic nephritis you will find great benefit from local depletion and counter-irritation, especially from the establishment of setons in the neighbourhood of the affected glands. In the renal complication of typhus, large blisters to the loins, and the internal administration of wine, are usually indicated; small doses of oil of turpentine will, in these cases, often increase the quantity and restore the acidity of the urine.

Treatment of the Oxalate of Lime Deposits.—Although there can be little doubt that oxalic acid is generated in the urine by the putrefactive decomposition, and often occurs subsequent to secretion in a manner totally independent of disease, yet it is also certain that this decomposition frequently results from an essential vice of secretion. The morbid conditions which give rise to this change are not yet known; but one thing is well ascertained, that in every instanee of the kind there is frequent desire to pass water, pain in passing it, and that the secretion is commonly loaded with epithelium. These phenomena proclaim the existence of irritation of the mucous membrane. Sometimes the crystals of oxalate of lime, like those of uric acid, cohere in the calyces and infundibula, forming calculi, which produce paroxysms of nephritic colic by their descent into the bladder. In such cases inflammation of the lining membrane may be mechanically produced; but it is doubtful whether the symptoms of mucous irritation which usually accompany the oxalate of lime deposit are due to the irritating contact of the sharp crystals. Whatever is the cause of the mucous irritation, it constitutes the lesion which, in oxalate of lime diathesis, you are especially called on to remove; and its successful treatment requires no little delicacy in the application of therapeutical agents. Unlike acute mucous irritation, depletion and emollients will act in this irritation injuriously, if employed in the first

instance; you must have recourse to tonics immediately, such as the mineral acids, vegetable bitter astringents, &c.; and, having employed those means for some time, you will then find the greatest benefit from alkalies largely diluted. It will be often necessary to alternate these methods of treatment for a considerable period, but you will generally find that ultimate benefit will be derived from steady persistence in their use. The form of tonic mixture which I usually employ in these cases is the following:

℞ Infusi cascarillæ ℥vj
Nitratis potassæ ʒj
Acidi nitrici diluti ʒiss
Tincturæ opii ʒj
M. Sumat cochlearia duo ampla ter in die.

Treatment of Diabetes Mellitus.—I look on saccharine urine as depending on a modification of the epithelial secretion produced by an asthenic condition of the urinary conduits. If this be the case, medicines calculated to exalt the tone of the secreting capillaries, are those best fitted to restore the natural function. Accordingly, experience tells us that the balsams, ammonia, stryehnia, and other excitants, are the medicines found most beneficial when the perspiratory secretion is suppressed; when, on the contrary, the functions of the skin continue unimpaired, much benefit is often derived from the internal use of chalybeates, alum, sulphate of zinc, or other metallic astringents. The whole system commonly shares either directly or consecutively in the debilitated condition which exists in the capillaries of the conduits, and it is, therefore, most desirable to employ every dietetic means calculated to increase the patient's strength. It is well, therefore, to give a moderate proportion of animal food, porter, &c., as much as is consistent with a proper exercise of the digestive functions; but from the exclusive animal regimen recommended by some, I have seen decidedly injurious results, but never any lasting benefit.

Treatment indicated by Purulent Deposits.—In my lecture on the pathology of urinary diseases have been described the different sources of pus in the urine; and in my lecture on the diagnosis of urinary diseases, I have mentioned the methods of distinguishing these pathological causes from each other. We have seen that the urinary mucous membranes pour out pus when in a state of asthenic inflammation, and this circumstance sufficiently indicates the appropriate treatment. Tonics are the medicines chiefly to be relied on in these cases: decoction of the leaves of chimaphila corymbosa, diosma crenata, or arctystaphylos, uva ursi, or of the root of cissampelos pareira, combined with mineral acids, will usually be found serviceable; chalybeates are also often of efficacy in these cases.

Treatment of Hæmaturia.—The most efficacious treatment of essential hæmaturias consists in the exhibition of astringents, such as tannin, or stypties, such as oil of turpentine; the use of the latter is very apt, however, to convert the hæmaturia into a nephritis; but in this case the reaction of the urine with litmus paper affords a most accurate test for pointing out the critical time when you should stop the exhibition of the medicine and cup the loins.

SECT. VII. DISEASES OF VARIABLE OR UNCERTAIN SEAT.

ART. 33.—*The Diagnosis of Gout and Rheumatism.* By Dr. ROBERTSON.*

The diagnosis between acute gout and acute rheumatism is generally sufficiently marked and determinable. The remissions in the paroxysm of acute gout are usually much more distinct than is the case in acute rheumatism. The profuse perspiration, so characteristic of acute rheumatism, is hardly ever seen in acute gout; not that it is meant to be asserted that the skin is not often damp with perspiration in acute gout, for this is often the case during the remissions; but that the general profuse perspiration, so very usual in acute rheumatism, hardly ever accompanies acute gout. In acute gout the affected parts are much more intensely painful, when neither touched or moved, than is the ease in acute rheumatism, and the swelling of the parts is less diffuse and less early in gout, being more gradual in its formation, and more confined to the region of the joint and the cellular tissues immediately over it, to which must be added, the peculiarly red and hot skin of the affected joint, and its subsequent glassy and pasty look, and the œdematous conditions so commonly consequent upon gouty, and so rarely upon rheumatic inflammation.

In acute rheumatism the attack usually involves the larger joints, whereas in acute gout the smaller joints of the hands and feet are in general exclusively affected. The general fever is of a more inflammatory character in rheumatism than in gout, in which it is commonly of more nervous and irritable character. The heart's action is seldom entirely uninfluenced by rheumatism; in gout it is seldom influenced further than a quickened and irritated action. Some assistance may be derived from the afternoon exaccrbations of acute rheumatism, and by the age of the patient. Dr. Macleod has shown that about one half of the cases of acute rheumatism occur before the age of 40 years, and even this proportion the author thinks is too small, his own experience leading to the inference that three fourths of the cases are attacked before the thirtieth year.

The chief difficulty, observes the author, is in diagnosing between chronic gout and chronic rheumatism; and in these cases we may be left without assistance from ascertainable hereditary predisposition, from age, sex, from habit of body, history of the life, from the state of the circulation, or from that of the digestive organs. In both, gout and rheumatism may have been unknown or unheard of in the preceding generations of the family, or both may have been believed to have been present; in both the age may be the same, in both the habits may be plethoric, or cachectic; the urine may be acid in both or not; in both the stomach may be out of order, or the digestion be little affected; in both there may only occasionally be felt any pain or uneasiness of the affected parts, which may have become gradually swelled, stiffened, charged with hard deposition, and contracted; and such cases may, indeed, often be diagnosed with much difficulty. Should the habits of life have been such as a comfortable position in worldly circumstances in some degree involves, should the complaint be untraceable to cold, and very little if at all

* Nature and Treatment of Gout, p. 203.

aggravated by change of weather, should there be tangible evidence that there is not only deposition, but chalky deposition, should the pulse be slow and easily compressed, and the heart's action be little affected, it being, however, expressly stated that this is very variable, as far as frequency of the pulse is concerned; should there be an eruptive tendency, especially if of dark-coloured pimples or blotches about the face, should there be decided dyspeptic indications, should the urine be frequently or usually unduly acid, should the disease have occurred in females for the first time after the cessation of the catamenia, these would, one or all, by so much serve to strengthen the probability that the case is one of gout. On the other hand, should there be no deposition, or manifestly only a gelatinous deposit, should there be contraction independently of deposition, should the case be ascribable to cold, or perceptibly affected by change of weather, should the pain be insensibly increased by the warmth of the bed, or rarely occasion inconvenience except on movement or pressure, or the uneasy feeling be sensibly relieved by warm applications or pressure, should the case occur in the hard-working and exposed classes of the people, the probability that it is one of rheumatism will, by so much, be added to. The two diseases are, unquestionably, very distinct from one another in their great bearings of prognosis and general treatment, and the diagnosis is of proportionate importance. Hereditary predisposition, or the state of the heart's action, or the state of the digestive organs, or the presence or absence of eruptions, or the appearance of the parts affected, especially if occasionally exacerbated, and when so, always with insensibly increased heat, and some surface redness (gout), or undisturbed nights, unless disturbed occasionally, or for a short time at once, by cramps, or twitchings, or startings of the limbs (gout), or the general restlessness at night, with more or less exacerbation of the sufferings in bed, or the more or less extension of the irritation to the shoulders or hips (rheumatism), may, severally or collectively, negatively or positively, help to determine this sometimes, it must be confessed, difficult, and sometimes, after all, undecidable question. As to the disease called rheumatic gout, the name is often used as an excuse for uncertain diagnosis, and applied sometimes to gout, and sometimes to rheumatism; the mixing up of the two diseases in the same case being, in truth, of very rare occurrence.

SECT. VIII. DISEASES OF THE SKIN.

ART. 34.—*On the Therapeutical Employment of certain Medicines in Skin Diseases.* By Dr. WILLIAM SELLER.

(*The Northern Journal of Medicine*, May, 1846.)

[The paper from which the following remarks are abstracted occupies a portion of three numbers of the journal. We give only those articles which we believe to be of general utility.]

Hydrarg. Nitras—Unguentum.—Used pure or diluted with three or four times its bulk of lard in sycosis. Usefully combined in many skin diseases with the linimentum aquæ calcis. (Edin. Phar.)

Hyd. Unguentum—Mercurial Ointment.—Effectually destroys pediculi of the pubis, for which purpose it may be combined with sulphur ointment.

Hyd. Nitrico-Oxydum—Unguentum.—The red precipitate ointment answers in many cases in which citrine ointment is used, as in porrigo furfurans; with the unguent. zinci it is useful in porrigo favosa. The ointment of deutoxide of mercury, recommended by Cazenave in papular diseases of the face, is made as follows: deutoxide of mercury ʒss, camphor grs. iv, (?) lard ʒj.

Hyd. Iodidum et Biniodidum—Cyanidum—Unguentum.—The two former ointments are highly successful in scaly eruptions, the latter, in the proportion of ʒj to ℥j of lard, is applied in eczema and chronic lichen.

Iodinium.—Iodine in the treatment of skin diseases is seldom used in the uncombined state. As a means of improving the general health, and of thus calling forth the latent sanatory powers of the constitution, few remedies will bear a comparison with iodine and its compounds; but in regard to diseases of the skin, the author thinks that slighter benefit is derived from its internal use than its evident alterative qualities might lead us to expect. Its chief power lies in its external application. Among the means of employing it locally are the iodine bath and iodine ointment. The bath should be of the strength of from two to four drachms of iodine, with hydriodate of potash, four to eight drachms [to a full bath. Ed.] The iodine ointment and the compound iodine ointment of the London Pharmacopœia are useful in acne, porrigo, and the scaly diseases.

The combined vapours of iodine and sulphur are of much service in lepra and psoriasis, and in the tubercular eruptions. These vapours may be thus generated and applied: a powder is made of half a drachm of sulphur, seven grains of cinnabar and two grains of iodine. This powder is placed on a heated iron in the bottom of a jar large enough to receive the patient's leg or arm, whichever may be the part affected, a grating being placed above the iron to prevent accidents. The diseased part is exposed to the vapour for the space of twenty minutes, and the proceeding is to be repeated three times a day.

An ointment of iodine and sulphur is beneficial in acne and porrigo; iodide of sulphur grs. xx-xxx, lard ʒj.

Pix liquida, Tar; Pix arida, Pitch.—Both pitch and tar are used in cutaneous diseases; both are applied externally, and pitch is, besides, given internally. The preparations of each are used in the scaly eruptions, as lepra, psoriasis, and ichthyosis. The internal use of pitch in these diseases may be carried to the extent of half an ounce in the twenty-four hours. In pityriasis versicolor, and in icthyosis, pitch has been pronounced as the best remedy. Rayer speaks highly of a pitch ointment in papular eruptions, and particularly in porrigo; he also recommends the free use of pitch internally in chronic ecthyma. In ringworm of the scalp, pitch ointment is very serviceable.

Potassa.—The internal and external employment of the preparations of potassa and soda has a well-founded reputation. The liquor potassæ is the form generally preferred, but Dr. Seller considers the choice unimportant, as he believes that it is converted into a carbonate when it comes into contact with the coats of the stomach. Internally the liquor potassæ is of great service in lepra, psoriasis, eczema, and acne, as a

lotion, or in poultice to remove the crusts of porrigo, in eczema as a lotion to allay the itching, as also in herpes preputiales, pityriasis capitis.

The carbonates of potassa are used in the same diseases as the liquor potassæ. The following lotion is recommended in lichen and prurigo: carbonate of potassa and distilled water, each two drachms, mucilage of bitter almonds eight ounces.

Potassii Cyanidum.—This preparation has not been much used, but is serviceable in diseases of the skin attended with great irritation. The following is a good formula: oil of bitter almonds two drachms, cyanide of potassium twelve grains; cerate two ounces.

Potassii Sulphuretum.—This salt is beneficial in several eruptions, in the form of lotion or ointment.

There are numerous formularies for lotions, liniments, and ointments, of sulphuret of potassium. Sulphuret of potassium one drachm, white soap two drachms, distilled water eight ounces; for use in prurigo, scabies, porrigo. *Dupuytren's lotion:* Sulphuret of potassium four ounces, sulphuric acid half an ounce, water two pints; for use in scabies. *Barlow's lotion:* Sulphuret of potassium, white soap, of each two drachms, lime-water seven ounces, alcohol one drachm; for use in porrigo. *Jadelot's liniment:* Sulphuret of potassium six ounces, white soap two pounds, olive oil two pints, oil of thyme two drachms; for use in scabies and prurigo. A mixture of soft soap and sulphur, celebrated for the cure of scabies, is sometimes termed ointment of the sulphuret of potassium, since soft soap is made with potass. The unguentum sulphuris compositum of the London Pharmacopœia, as containing sulphur and soft soap, besides nitre, veratrum, oil of bergamot, and lard, may also be described as a compound ointment of the sulphuret of potassium; its chief use is for the cure of scabies. Helmerich's ointment, so celebrated for the cure of scabies, is essentially an ointment of the sulphuret of potassium. It consists of sublimed sulphur half an ounce, carbonate of potassa two drachms, lard two ounces; one half of this quantity is to be used daily.

Zinci Præparata.—The ointment of the oxide is useful in many eruptions; in some more benefit is derived from the lotion of the same preparation. The chloride of zinc is used as an escharotic in various strengths, it is made into a paste. (For mode of forming and using this paste, see Abstract, Vol. I, p. 67.)

Art. 35.—*Observations on Acne.* By John Erichsen, F.R.C.S., Lecturer on Physiology and Surgery at the Westminster Hospital.

(*Medical Gazette*, Nov. 7, 1845.)

"Whether," observes Mr. Erichsen, "we consider the frequency of its occurrence, the disfigurement it occasions, or the obstinate form it frequently assumes, there are few diseases of the skin better deserving the attention of the practitioner than acne."

The classification of the varieties of this disease by Willan and Bateman are considered by the author as inferior to that of Gibert, the former being established upon characters which are transitory and unimportant, the latter being sufficiently accurate for ordinary purposes. The classifi-

cation alluded to consists of the division into acne disseminata (which includes the punctata simplex and indurata of Willan), acne rosacea, and mentagra. We need not follow the author in his descriptions of these several varieties, as they are sufficiently well known, but proceed at once to the analysis of the more interesting and novel portions of his communication.

In his account of the etiology of the disease, the author refuses to admit the common opinion, that it is a disease of puberty: it rather belongs, as he observes, to adult age, 31 out of 97 cases occurring between the ages of 20 and 25, no male being affected before the age of 18, and only two females before the age of 15. Of 16 females affected between their 15th and 20th year, only 5 were below 18; 11 being between that age and 20. Season appears to have little or no influence on the occurrence or progress of the disease.

The observations of writers on diseases of the skin concerning the constitutional causes of acne are obscure, and often contradictory. Plumbe considered it to depend upon a plethoric condition of the system, leading to a depraved secretion of the sebaceous matter. Rayer states that in females it is frequently connected with dysmenorrhœa, and in young men with intemperance or the practice of onanism. Gibert regards it as most frequent in lymphatic constitutions, and in persons who labour under an habitual derangement of the digestive organs. This writer, as do also Cazenave and Schedel, acknowledges the connexion of the disease with self-pollution. This, however, the author of the present communication denies, or admits only as one of the many causes which may deteriorate the general health. In analysing the 97 cases which form the basis of his paper, the author finds that of 38 male patients, 16 were subject to habitual constipation; in 19 there was more or less irritative dyspepsia. and in 3 only was the general health perfectly good.

Among the females the causes were equally well marked. In 39 cases there was disorder of the uterine functions, combined in most cases with stomach or liver derangement. Of these 39 cases, 34 suffered from amenorrhœa and dysmenorrhœa, 3 from menorrhagia, and 2 from leucorrhœa.

From this and other data adduced by the author, it is evident that the menstrual function has great influence in predisposing to acne. This influence would also appear to be most powerful in early life, and gradually to diminish in intensity as the patient advances in life.

The treatment of acne, which, as the author justly observes, is too frequently undertaken without sufficient attention to common principles, may be both local and general. The latter chiefly consists in the removal of any constitutional derangement. If, for instance, the patient be suffering from dysmenorrhœa, with weak circulation, the proper means must be adopted for the restoration of the menstrual discharge, and for invigorating and restoring balance to the blood-vessels. In these cases the author recommends the pilula aloes cum myrrhâ every second night, with a pill composed of equal parts of the sulphate of iron and powdered ginger, thrice a day, or an equivalent dose of the tinct. ferri sesqui-chloridi, or of the citrate of quinine and iron. If the mineral tonics cannot be borne, the sulphate of quinine, or the bicarbonate of potash in a bitter infusion, may be substituted.

When the disease occurs independently of uterine disturbance, it will generally be found to be connected with more or less gastric disorder, and must be treated accordingly. In the commencement, a few grains of blue pill or mercury with chalk may be given each other night, followed in the morning by the compound decoction of aloes. After the bowels have assumed a more regular action, Plummer's pill every second night, in eight or ten grain doses, will be found of great advantage, as it increases the activity both of the skin and liver. As an habitual aperient, the author prefers Marshall Hall's aloetic pill at night, or a wineglassful of Pulna water in the morning. This mineral water he states to be extremely useful in habitual high livers, and therefore more particularly in the form of acne to which they are subject—the acne rosacea.

Independently of constitutional treatment properly so called, the author insists upon the necessity of internal medicines having a special action upon the seat of the disease. Of these, one of the best is the liquor potassæ, which appears to liquefy the deranged sebaceous secretion, and to favour its escape. In order, however, to derive the full advantage from this medicine, it must be given in liberal doses, not less than 25 to 30 minims, gradually increased to 60 or 70 twice a day, and largely diluted. As a vehicle, the author prefers the infusion of nettles, made by pouring a quart of boiling water on a handful of the common nettle. As regards diet, all stimuli, whether fermented liquors, or coffee, spices, &c., must be avoided, and the food should be rigidly limited to the lighter and more nutritious articles.

The plan of local treatment generally adopted is of a stimulating character. This is considered by the author to be much too indiscriminately applied. He recommends, in the first place, that the irritation caused by the obstruction of the follicles, should be removed by poulticing, or by the local vapour-bath. A convenient proceeding, devised by the author, consists in pouring boiling water into a basin, and holding the head over it, enveloping both in a towel or handkerchief. This should be repeated twice a day, and will be found speedily to remove the feeling of harshness and stiffness of the face which is so much complained of.

In simple cases, consisting solely of acne disseminata, or of this combined, as it frequently is in young females, with pityriasis, this treatment, with the application of white precipitate ointment, or the diluted unguent. hyd. nitrales, will in general speedily dissipate the disease. If, however, the variety called *acne indurata* be present, it will be requisite to adopt more energetic measures. It is in these cases that the plan recommended by Plumbe of pushing a lancet down to the bottom of the larger tumours, and evacuating their contents, will be found especially useful. In addition to this, warm bread-and-water poultices, to which olive oil has been added, should be applied every night; the steam-bath should be used three times a day, together with the unguent. hyd. nitratis. When the disease is located in the back,an ointment of the iodide of sulphur may be employed, but it cannot be so well used on the face, as it discolors the skin.

In acne rosacea local means are of much less service than in the other forms of the disease. Caustics have occasionally been used, but the author does not consider them worthy of much confidence. The only local means upon which he depends are the diligent employment of the steam-bath, together with one of the ointments before mentioned. It is

in these cases, he observes, that the liquor potassæ, given with boldness, is of essential benefit. Its efficacy is, he adds, increased by combination with the bicarbonate of potass, as in the following formula:

℞ Liq. potassæ ℥j, potass. bicarb. ℥ss, aquæ ℥vij. Dose, one tablespoonful twice a day, in half a tumblerful of nettle tea, increased to two tablespoonfuls.

The author next describes an affection which he states has not been sufficiently noticed by preceding writers. It consists in the appearance "of a number of pearl-like tubercles, varying in size from a pin's head to a split pea," generally occurring where sebaceous glands are numerous, as in the forehead, eyelids, and showing no disposition to suppurate. The treatment consists in removing the concretion with the point of a needle, and in the use of chalybeates, with the unguent. hyd. nitratis, or a lotion of a drachm of sulphuret of potash to eight ounces of water.

[In conclusion, the author alludes to a disease of rare occurrence, to which the name acne sebacea has been applied; it appears to have been noticed by Willan and Bateman, but confounded with ichthyosis; its true nature was first pointed out by Rayer. Its characters are well set forth in the following case:]

N. N., esq., aged 28, consulted Mr. Erichsen for an eruption appearing in the form of a triangular patch of a dirty yellowish gray, and yellowish brown crusts, extending over a great portion of both cheeks, the base being opposite the roots of the whiskers, the apices coalescing on the bridge of the nose; crusts of the same nature covered the alæ nasi, the upper lip, and forehead. The crusts were traversed by numerous fissures, dividing them into fragments of a square or diamond shape. On the lips the crusts were thicker than elsewhere, and had the consistence and appearance of the cerumen of the ears. In other parts of the face they resembled coarse shagreen. The treatment adopted was alterative doses of Plummer's pill, milk diet, and regulated exercise. To remove the crusts, poultices were applied. On the 15th day the nose and upper lip were cleaned of the crusts, exhibiting the skin glazed and inflamed. On examination, the orifices of the sebaceous follicles could be seen to be considerably dilated, and their secretion soon covered the denuded part. In order to modify the diseased action of these follicles, the author applied the lotion of the sulphuret of potash. The case ended in a perfect cure.

Art. 36.—*On the Treatment of Acne.* By Mr. Startin.

(*Medical Times*, Aug. 1, 1846.)

Local and general means for increasing the cutaneous circulation and determining the blood to the surface will generally produce a favorable change in the malady, and I have found the hot air-bath, with or without sulphur fumigations, of great service, whilst chalybeates, combined with the mineral acids, with the vegetable bitters and with iodine, have furnished my most useful internal agents; arsenical preparations and mercurials, unless the latter should be indicated by hepatic or visceral disease, *are not indicated or required* in these cases, nor when used, have they appeared to me to be attended with benefit. The dict

of patients afflicted with acne requires to be mildly nutritive, nor must a proper portion of alcoholic stimulus be discarded, otherwise the digestive organs, which are seldom in a healthy condition, are apt to neglect their office. Vegetable acids and antiscorbutics, as they are called, and vegetable diet drinks, are in my experience worse than useless. I do not know whether I dare include sarsaparilla in this condemnation, though I feel inclined to do so, as I am aware that it is the stronghold of many of my medical brethren, whose experience must differ from mine, if sarsaparilla has proved of greater utility in these diseases than the same quantity of mildly nutritive fluid. The external local treatment of acne is not the least important, and must be regulated entirely by the stage and condition of the disease. In its commencement, when a loaded state of the sebaceous follicles is the most prominent symptom, moderate frictions with the flesh-brush so as to open the pores, and the extraction by pressure of the larger collections of sebaceous matter (the outlet of the follicle being dilated with some pointed but not too sharp instrument) will be required; whilst a weak spirit lotion and the use of oatmeal instead of soap may be enjoined. As the disease advances, and the suppurating points are numerous, large, and painful, the vapour douche on the face, mercurial ointment, with camphor, white precipitate with camphor, or the *Topique contre acne* of the Hôpital St. Louis, may be recommended; the latter is composed of slaked lime ʒj, zinc ointment ℥j, and camphor ℈j. From fifteen to thirty grains of the ioduret of sulphur to an ounce of lard is also a useful application, as is a weak solution of biehloride of mercury, in milk of bitter almonds, or thin quince-seed mucilage. The following lotion, not to be found in books, you will find occasionally very efficient: hyposulphate of soda ʒj to ʒij, sulphate of alumina ʒj to ʒij, rose water ℥viiss, Cologne water ℥ss, for a lotion, to be used by washing the part with a linen rag twice or thrice daily. Of course these proportions are not applicable in every case, but the composition is very useful in removing the unpleasant yellow stains of the cutiele as the acne declines, and it is perhaps more applicable to acne rosacea and pustulosa, than to the other varieties of the disease, as it always relieves the attendant itching.

Art. 37.—*On the Treatment of Porrigo Scutulata.* By Mr. Erichsen.

(*Medical Gazette*, June 19, 1846.)

The treatment of porrigo scutulata is of two kinds, varying according to the end which we wish to obtain, and the stage of the disease; the object of the first kind of treatment being to arrest the disease at once in its earlier stages; that of the other being to modify the action of the integument where the disease has become chronic, in such a way as to cause it to resume a healthy action.

Mr. Erichsen's plan is as follows:—The first thing to be done is to shave the head without delay, in order to ascertain the precise extent of the disease. When this is done, he touches the diseased patches with one or other of the stronger acids, so as if possible to cut the disease short at once. After trials of all the acids, he prefers the strong acetic, as recommended by Dr. Wigan, and also approves of

the advice given by that gentleman of testing the shaven scalp by a lotion composed of one part of strong acetic acid to three of water; by which means a number of diseased patches are detected by becoming reddened, which otherwise would be overlooked. Then the concentrated acid is applied to all the spots by a piece of sponge tied to a stick. Mr. Erichsen considers that used in this manner the acetic acid is far preferable to the mineral acids, as these latter do not penetrate to a sufficient depth to eradicate the disease without the risk of inducing a slough.

After the patches have been efficiently imbued with the acid, nothing is to be done to them for a week or ten days. When the crust that has been produced by the action of the acid has been raised off the scalp by the growth of new hair, it should be removed, and if, after a minute examination with the microscope, any disease should still be detected, the acid must be reapplied, the parts being previously washed with soap and water.

Mr. Erichsen urges the necessity, before deciding that a case is cured, of examining the new-formed hairs with a lens, to ascertain that they do not contain the characteristic sporules of porrigo. Without this precaution it is injudicious to pronounce a favorable opinion of the case.

After the acid has been continued until the whole of the vegetable organisms have been destroyed, and not until then, we may have recourse to stimulating applications to encourage the growth of the hair, and prevent the recurrence of the disease. Amongst these, Mr. Erichsen has generally been satisfied with creosote ointment (creosote ʒss, lard ℥j), or the tincture of iodine, applied with a brush. He also uses the unguent. hyd. biniodidi, diluted with six times its bulk of unguent. picis liquda, or the carbonate of potash ointment, (carb. potass. ʒj, axunge ℥j). In conjunction with one or other of these ointments, he recommends the scalp to be washed three or four times a day with a lotion of sulphuret of potash (potass. sulphuret: and aqua calcis).

It is important at the same time that these local means are employed to attend to the general health; if the child be of lax fibre, and scrofulous or delicate, he should have a nutritious diet, and take the iodide, citrate, or ammonio-chloride of iron, either alone, or with a bitter infusion, as quassia. Cod-liver oil has been recommended in these cases, but Mr. Erichsen has been disappointed in it.

It sometimes happens that after the porrigo is cured an impetiginous eruption occupies its place, induced, Mr. Erichsen thinks, by some error in diet. This is, however, readily got rid of.

Art. 38.—*Treatment of Porrigo Scutulata.*—On this subject Mr. Coley observes, "the astonishing number of specifics recommended for this eruption sufficiently proves the intractable nature of the disease. Very few of the acrid applications mentioned in books are advisable or useful. The hair should be cut off, not shaved; and, during the daytime, folds of linen rag, moistened in cold water, should be applied all over the head, and moistened again with cold water as often as they become dry. At bedtime the head should be covered with the leaves of ivy (hedera helix):

the Irish, or giant ivy, from the Canaries, is the best. The patient should take internally a grain or two of iodide of potash, twice a day, and be well purged with salts and senna every second or third morning. I have never found this treatment to fail, except in one case, which was afterwards cured by an ointment composed of one drachm of sulphate of iron and one ounce of lard; the cold water being used at the same time. The manner in which the water-dressing acts, is by promoting evaporation, which removes the excessively redundant heat from the surface; and I suppose the ivy leaves, possessing a kind of natural varnish, operate by exciting cutaneous perspiration, which of itself is a working process. This is the only mode of treatment from which I have found success in a reasonable time."

Review of Coley on Diseases of Children. Medico-Chirurg. Rev. Oct. 1846.

Art. 39.—*On the Causes of Baldness.*—[Mr. Cattell, in a paper entitled "Practical Remarks on the Diseases of the Hair," thus speaks of baldness:]

Baldness, in relation to its causes, may be thus distinguished:

First, where it occurs in the vigour of life.

Secondly, where it exists in the decline of life.

In baldness taking place during the vigour of life, we find two opposite conditions of the skin—morbid constriction, and morbid relaxation.

1. Epidermical constriction.

This state of the skin may arise from the powerful influence of the passions, cold, febrile affections, &c.

And it may produce baldness in one of two ways—either by partially strangulating the hairs, and thus preventing the rise of their colouring elements, constituting absolute discoloration; or by causing the hairs to break off on their exit from the skin, leaving behind only the roots of the hairs, but so far hidden and confined below the skin as to constitute baldness.

Such being one of the immediate causes of baldness, it may, further, be pronounced temporary or permanent.

The duration of baldness resulting from epidermical constriction will be correspondent to the facility or difficulty with which a removal of this state of the skin is accomplished.

Baldness may be only temporary, when the orifices of the hair-pores are closed by dry scales and cells, which frequently collect at their aperture, the hair growing, notwithstanding its inability to escape.

Baldness must be considered permanent when, subsequently to the removal of the epidermical constriction, there exists that condition of the roots of the bulbs which we shall notice under the head of senile baldness.

The prognosis of baldness is regarded favorable, when the scalp, by friction with the hand, portrays an immediate redness; unfavorable, when the contrary.

2. Epidermical relaxation.

During the continuance of this condition of the skin, the hair not only falls off, but comes out in considerable quantities, whenever it is combed or brushed.

Epidermical relaxation, then, becomes a cause of baldness, by permitting an enlargement of the perspiratory pores, and too abundant perspiration; for it is a remarkable fact in persons suffering from loss of hair through relaxation of the skin, that they perspire on the least exertion or exposure to the heat.

Epidermical relaxation operates, moreover, as a cause of baldness, by destroying the firm interlacement which exists between the roots of the hairs and skin.

That the existence of the hair cannot be permanent, when only held in the skin by its roots, will be evident, if we examine a hair pulled out by its root—in which case, it will be found soft and pulpy in structure. Besides, we must annex the opinion, advanced by many anatomists, that the roots of the hair are fixed in the rete mucosum, or fat, immediately beneath the outer skin.

Associating, then, the existence of epidermical relaxation with the fact that the hairs owe their chief stability to a healthy firmness and condition of the outer skin, it is not in the least surprising that they should be loosened, come out, and leave the patient bald.

Secondly, where it exists in the decline of life.

Baldness in the decline of life does not arise from the two previously mentioned causes, but from a decay of the roots or the bulbs of the hairs.

And it must be observed, that baldness is not an isolated effect of the lapse of years, but a general one, which supervenes in consequence of the obliteration and loss of function that occurs in almost all the exterior vessels of the system.

In observing the order of changes giving rise to baldness in aged persons, we may notice,—1st, deficient supply of the colorizing elements of the hair; 2dly, death of the internal pulp, the external part only remaining; 3dly, after discoloration of the hair has occurred, the small bag which contained the root is gradually obliterated, and finally disappears.

Lancet, Sept. 19, 1846.

ART. 40.—*Dextrine Bandages in the Treatment of Eczema.*—M. Devergie has recently made a series of experiments to determine the value of the above means of treating eczema. The strength of the solution he employs is 125 parts of dextrine to 1000 of water. His bandage is applied as in the ordinary surgical method. Each bandage is allowed to remain three days, and care is taken to moisten it thoroughly with warm water before removing it, in order that the tender epidermis may not be injured. M. Devergie thinks that a liquid of greater density than the above is not so suitable, as it checks the secretion too rapidly, or may give rise to impetiginous pustules; in the latter case the bandage must be omitted. The pressure used by the bandage should not be so great as to leave marks upon the integument.

It is important to determine whether the good effects of the dextrine bandage are due to the compression, or to the dextrine, which prevents the contact of the atmosphere; M. Devergie admits that in many cases, especially in those which are connected with varicose veins, bandaging alone may be sufficient, but he regards the addition of the starch as of great use in the majority of cases, as it absorbs the secretions, and allows the bandage to be more easily removed.

He finds that the stareh bandage removes the troublesome itching more effeetually than any other application.

[We beg to recal the reader's attention to a formula, by Dr. Kelly, which will be found, 'Abstraet,' Vol. III, p. 201. We have recently employed this in several cases of obstinate local eczema with the most satisfactory results. Ed.]

Art. 41.—*Topical Treatment of certain Diseases of the Skin.*—M. Cazenave often uses simple acidulated lotions with advantage in certain cases of acne, liehen, pityriasis, and eezema; after removing the incrustations, he applies the following:

Alum	.	ʒij
Infus. rosar.	.	Oj. M. ft. lotio.

The alum may be inereased to ʒiij. Another lotion, much relied upon by him in the same diseases, is as follows:

Hydrarg. biehlor.	.	10 centigr.
Ammon. hydroehlor.	.	30
Emulsio amygdal.	.	250.

Art. 42.—*Efficacy of Creosote on Papular Affections of the Skin.*—M. Max. Simon, has recently published some observations relative to the treatment of papular diseases of the skin when they have become ehronie. The application whieh he has found most beneficial is an ointment of creosote, made as follows:

Lard	.	ʒij
Creosote	.	½ dr.

to be made into ointment.

Gazette des Hôpitaux, 14 Juillet, 1846.

Art. 43.—*Treatment of Aphthæ.*—Professor Lippich, of Padua, uses with advantage the following application in the treatment of aphthæ: Honey, 15 parts; sulphurie acid, 1 part (by weight). The mixture is applied by means of a camel's hair brush to the aphthous uleerations.

Gazette Médicale, 27 Juin, and *Encyclographie des Sciences Méd.* Août, 1846.

SECTION IX. VARIA.

Art. 44.—*On the Management of Convalescence from Acute Disease.* By M. Reveille Parise.

(*Etudes de l'Homme dans l'Etat de Santé, &c., in Medico-Chirurg. Rev.* July, 1846.)

M. Parise remarks that after serious and prolonged illness every organ suffers more or less from exhaustion, and its funetion is feebly performed. This condition of the economy results from violent exeitement of the anteeedent disease and the privation of food. The former, of course, no longer operates, and food may be given to replenish the

waste, and recruit the forces, the stomach is therefore the organ with which we have to do.

M. Parise lays it down as a maxim that, after disease, the sensibility of the stomach and intestines is exalted and their tone diminished. The indications therefore are obviously to diminish the sensibility and to augment the tone of the stomach, and consequently to enable digestion to be properly performed; but our means of accomplishing this are not so efficacious as might be imagined. If the subject be young and vigorous, health is soon restored, and digestion established; but even here, if the tormenting hunger which accompanies convalescence be appeased by injudicious supplies of food, various disturbances of the digestive organs ensue. "But if the convalescent is naturally delicate, nervous, or irritable, if his digestive powers are not strong even in health, if he has reached a certain age, or been worn by anxiety, we must expect a tedious convalescence."

At first sight, the fortifying the stomach by tonics would seem to be a natural means of procedure; but every reflecting practitioner has seen cases in which an irritable and sensitive condition of the stomach renders the establishment of its powers a matter of nicety, as well as difficulty. If we employ a soothing means and a debilitating regimen, the tone of the organ is further diminished; while if we exhibit stimulants, uneasiness and thirst, dryness of the mouth, &c., prove that we are injuriously exciting the organ. Diarrhœa occurring during convalescence often misleads the practitioner, for he has difficulty in determining whether it is caused by some source of irritation still remaining, or whether it is the consequence of simple atony of the intestinal canal. In these cases it may be stated as a general rule, that the diarrhœa of convalescence is connected with defective tonicity, which will be yet further diminished by abstinence and local depletion.

The following indications form the basis of a judicious convalescent regimen: 1. To allow only as much food as the stomach can digest. 2. To advise the patient to eat little and often. 3. To submit the food to effectual mastication. 4. To keep the general surface, and especially the extremities, warm during digestion. 5. To adapt the food to the peculiar sympathies of the stomach. 6. To introduce a judicious variety in the diet. 7. To advise change of air. 8. To avoid vivid moral emotions.

It is certain, notwithstanding, that however properly the above injunctions be carried out, the recovery may be impeded by various accidents. Only two of these are alluded to by M. Parise, and that because of their frequency, viz. *diarrhœa*, and *gastro-enteralgia*. When the first of these is present we must endeavour to ascertain whether it is produced by errors of diet or by some moral cause. Is there any inflammation, or does it depend upon simple atony of fibre? Even when symptoms believed to be inflammatory are present, we must still be very cautious in recommending abstinence and leeching, which may produce a degree of exhaustion and loss of contractility of parts, which may take years for its reparation. Diminution of food will, however, be required, as well as counter-irritation, in the form of dry cupping, or sinapisms to the abdomen. When the irritation has subsided, mild tonics and an improved diet are indicated. In passive diarrhœa, M. Parise speaks of

the *theriacum* (a miscellaneous compound containing opium) combined with calumba.

Gastralgia, or *enteralgia*, is far more frequent after severe disease, especially when the alimentary canal has been affected, than is generally believed. The irregularity forms one of its most distinguishing features. The acute feeling of hunger suddenly changes into a state of insupportable languor. In this state a superabundant nourishment is injurious, but in a far less degree than a too scanty one. Abstinence cannot be borne, nor do the epigastric pain and sinking cease until a certain quantity of food has been swallowed; while if its administration be too long delayed, digestion does not take place, and diarrhœa is apt to ensue. First among medicines adapted to this state is bismuth alone, or with opium and calumba. Blisters, sinapisms to the epigastrium are also beneficial, as is also the endermic use of morphia.

Whatever means we have recourse to for the restoration of the energy of the alimentary canal, their prolonged employment is necessary. "Perseverance and variety," says M. Parise, "must never be lost sight of in a troublesome convalescence, during which health and disease are constantly vibrating."

ART. 45.—*Deglutition excited by dashing Cold Water on the Face.*—[The following suggestion by Mr. Simpson, of Stamford, founded upon the invaluable principles of the excito-motory system, is worthy of more general application in cases in which the power of voluntary deglutition is lost. The suggestion is well illustrated in the subjoined case.]

A poor man, who had attempted suicide, was sinking from the effects of loss of blood; his pulse was imperceptible, and the action of the heart could scarcely be felt. It being desirable to administer stimulants, his mouth was filled with spirits and water, but the patient was unconscious, and therefore did not swallow. Cold water was dashed upon his face, for the purpose of making him swallow by exciting reflex action, when the contents of the mouth were instantly gulped down.

Lancet, August 29, 1846.

ART. 46.—*On the Abuse of Alkaline Remedies.* By Professor TROUSSEAU.

(*Journal de Médecine*, March, 1846.)

The object of this paper is to caution practitioners against the abuse of alkalies. These remedies exercise an immense influence on the economy. If by their use the alkaline state of the blood is increased, all the secretions from that fluid are modified. The secretions which are naturally alkaline become more so, those which are neuter will become alkaline, and those which are acid will become either less acid, or more or less alkaline. The presence of acids being one of the conditions for the digestion of food in the stomach, it cannot be a matter of indifference to neutralize the acids which the economy wants—for the transformation of fecula into glucose, for instance. The digestion of amylaceous substances becomes, therefore, incomplete, or extra-natural, if we may use the expression. The presence, also, of alkalies in the blood in due proportion,

gives to this liquid the means of burning, to a certain extent, the carbonaceous elements absorbed in the process of digestion. An imperfect combustion gives rise, without doubt, to morbid symptoms; but a too great or too rapid combustion, on the other hand, is not the less attended with inconvenience, as it gives rise to important mutations in the composition of the blood, and consequently in the texture of the organs.

It is, therefore, under no circumstance unimportant to administer alkalies. Taken without any real indication for a few days, they only give rise to momentary disturbance, but, taken in large quantities, they occasion a cachectic condition, followed by a deplorable state of emaciation. The ancients have admirably indicated the influence of alkalies on the composition of the blood: they had remarked that it became more fluid, being paler than in the normal state; and that at last a cachexia became established, characterized by paleness, general puffiness of the tissues, and passive hemorrhage; moreover they had also perceived, that these symptoms were followed by emaciation. Within the last few years, the abuse which has been made of the mineral waters of Vichy and Carlsbad, in the treatment of gout, has proved the above fact. The abuse of alkalies has certainly done more harm than that of iodine.

How is it that physicians do not see that a remedy powerful to cure is also powerful to do evil? Alkaline remedies are daily administered with inconceivable indifference. A physician prescribes to a patient one or two months' use of the waters of Vichy, Carlsbad, or Ems, as he would barley-water to drink. Is it a matter of so little importance to change all the secretions of the economy? Other alterative medicines are wielded with more prudence. Mercury and iodine, for instance, are administered with care and precaution, because the danger which attends their use is known.

In conclusion, Professor Trousseau unhesitatingly states, that the danger of alkalies is greater than that of mercurials, because the danger is less suspected, and that their administration is often only arrested when the health of the patient has been irreparably destroyed. This is not so often the case with mercurials, because the experience of three centuries has told us that mercury could not be taken long with impunity. It behoves us, therefore, to make generally known both the immense utility and the extreme danger of alkaline remedies.

ART. 47.—*Method of Disguising the Nauseous Taste of Castor Oil.*—In order to obviate the nausea so frequently produced by castor oil, M. Righini proposes to mix it with syrup and gum arabic in the following proportions:

Castor oil . .	30 parts
Sugar . . .	30
Water . . .	100
Powder of gum arabic	8

This is made into an emulsion, and the juice of an orange is squeezed into it.

Medical Gazette, Sept. 18, 1846.

PART II.—SURGERY.

SECT. I. SYMPTOMATOLOGY AND DIAGNOSIS OF SURGICAL DISEASES.

ART. 48.—*The Symptoms and Diagnosis of Fracture of the Descending Ramus of the Pubis, near its junction with the Ischium.* By H. HANCOCK, Esq.

(*Lancet*, May 23, 1846, p. 569.)

[A case of this accident, by no means of frequent occurrence, is reported from the practice of Mr. Hancock, at the Charing Cross Hospital. The patient fell fourteen feet, and his symptoms were, for the first ten days, such only as would arise from a severe shock and bruise. The subsequent report is important in a diagnostic point of view.]

On the tenth day the patient got out of bed for the first time since the accident, and endeavoured to dress himself; but, although entirely free from pain in the buttock, he was unable to raise his left foot from the ground, and in attempting to do so he said he felt something move in the perinæum. A crepitus was distinctly felt close to, but rather higher, than the junction between the ramus of the ischium and the pubis of the left side. Shape and position of the limb natural; exact correspondence in the length of the limb with its fellow; the limb, resting on the bed in the straight position, could not be raised beyond about an inch, and then only with great pain; neither could it be abducted beyond a certain distance (23 inches measured from heel to heel). When the patient lay straight in his bed he could bend his knee, and afterwards approximate the thigh to his body, the foot being in this way entirely raised from the bed. He could also perform adduction; and as the limb passed the mesian line, so was the power of raising the straightened limb increased, and performed with diminished pain. He could not assume the sitting posture without supporting himself with his hands.

For ten days the patient always referred his suffering to the left nates and lower parts of his back, and never to the seat of fracture; but this may be explained by the bruising of his buttock having been so severe, that he was prevented moving the left leg at all, for it was not until the effects of the contusion had subsided, that upon endeavouring to get up, his attention was directed to the unusual sensation in his perinæum; neither did he experience the slightest injury to his urethra or bladder; indeed, from the first, he passed his water without difficulty, and with

about the usual frequency. In examining the patient for this accident, the limb should first be abducted, to put the adductor and gracilis muscles upon the stretch, and the thigh afterwards rotated on its axis; as when the rotation or circumduction was employed whilst the limb was adducted, no crepitus could be distinguished, but when adopted after previous abduction, the crepitus was distinctly and immediately made evident.

[The case proceeded without a bad symptom, and the patient entirely recovered the use of his limb.]

Art. 49.—*New Diagnostic Sign. Fracture of the Inferior Extremity of the Humerus, and Dislocation of the Elbow.*—This sign, observed by M. Malgaigne, consists in the difference of aspect of the bend of the elbow in the two affections. In both, a swelling is observed in that region; due, in case of fracture, to the protrusion of the inferior extremity of the upper fragment; in case of dislocation, to the protrusion of the articular surface of the humerus in front of the forearm. In the first instance the swelling will be found above, in the second below the bend of the elbow.

Medical Times, June 13, 1846, p. 206.

Art. 50.—*Aneurism of the Cœliac Axis.* By James Turnbull, M.D.

(*Report of the Liverpool Pathological Society. Edinburgh Medical and Surgical Journal*, July, 1846, p. 23.)

A sailor, 23 years of age, pale and thin, came under my care in the Northern Hospital, in the beginning of June, 1845, with a pulsating tumour in the epigastrium. He had recently returned from a voyage to the East Indies, during which he had an attack of dysentery, and he first perceived the pulsation at St. Helena, when recovering from it. He could assign no cause for the tumour, but thought that it had been produced by the dysentery. The tumour was situated just under the cartilages of the false ribs on the left side. It was distinctly circumscribed, and had a strong pulsation. When the stethoscope was applied to it a loud bellows-murmur, having a hoarse aneurismal character, was heard during the pulsation. It was audible also along the aorta, but diminished in intensity in receding from the tumour. The sounds of the heart were quite natural, and the pulse was 70. He complained of severe pain in the tumour, increased by examination, and had been at one time unable to lie down. He had also sickness and vomiting, which were relieved by hydrocyanic acid, with digitalis, and by muriate of morphia.

On the evening of the 5th of June he was seized with agonizing pain in the abdomen, collapse rapidly followed, and he died about twenty minutes afterwards.

Inspection.—The abdominal cavity contained a large quantity of coagulated blood, which had oozed out from a small opening in a tumour, which at first appeared to be an aneurism of the aorta. The tumour was as large as a moderate-sized apple, and was found to be an aneurism of the cœliac axis, the three branches of which were seen coming off from its anterior part. Within, several layers of fibrin were deposited. The heart, the valves, and the coats of the aorta seemed healthy.

ART. 51.—*Tumour developed in the substance of the Fifth Nerve and its Ganglion.* By JAMES DIXON, Esq.

(*Dublin Medical Press*, Aug. 5, 1846.)

A woman came under my care in October, 1844, for dimness of sight in the left eye. The fifth nerve on the same side had totally lost both its sensitive and motory function for a period of six months. Towards the middle of December inflammation of the eye came on; lymph was effused into the anterior chamber, and the pupil became closed. At a later period the external rectus and levator palpebræ, as well as the muscles supplied by the facial nerve, were paralysed, and on the 8th of February, 1846, the patient died.

The various symptoms observed during life were satisfactorily explained by the post-mortem examination. The temporal muscle on the right side was of a natural appearance, whilst the left one was so wasted as hardly to be recognized. Everything was healthy in the brain and nerves on the right side. To the left of the pons varolii was an oval mass, slightly attached to the encephalon at the junction of the pons and crus cerebelli, and extending forwards, beneath the dura mater, as far as the foramen lacerum orbitale. This tumour, from which the three divisions of the fifth nerve emerged, had hollowed out for itself an irregular pit in the concavity of the great wing of the sphenoid bone. The glosso-pharyngeal, vagus, spinal accessory, and lingual nerves were unaltered. The morbid growth proved to be a degeneration of the trunk of the fifth nerve and Gasserian ganglion. A section showed a reddish, soft, but not pulpy mass, with here and there parts of firmer consistence, and of a yellowish colour. Not a trace of nerve-tubes or ganglionic corpuscles could be found in it.

Nothing abnormal was noticed in the ophthalmic ganglion or the ciliary nerves. The eyeball was as large as the right one; the sclerotic was of natural thickness; the choroid of a reddish brown, with no trace of black pigment, except a little about the ciliary processes. The vitreous humour was perfectly clear and colourless; the iris adhered to the middle of the lens, which was of a pale yellow, and opaque at the centre. The cornea showed traces of its former opacity.

The author adverts to another case of an inflammation of the eye, similar to the foregoing, with entire loss of function of the fifth nerve, on the right side, dependent on the development of a hard nodule of yellowish matter, about the size of a large pea, in the substance of the fifth nerve, close to its origin from the pons. On the left side a similar nodule was developed in the third nerve, and this had totally destroyed the function of the optic nerve, by compressing it just behind the commissure. The difference could be observed between the deeper textures of the two eyes. The lower third of the right cornea presented a dense white cicatrix, to which the edge of the contracted pupil adhered.

ART. 52.—*The Stereoscope* is a new instrument invented by M. Cornay; for applying auscultation to the detection of vesical calculi, and even of foreign bodies in the soft parts of the body. The instrument resembles a common catheter, and presents at its free extremity a sort of broad pavilion, somewhat resembling that of a speaking-trumpet.

Medical Times, June 20, 1846, p. 225.

SECT. II. NATURE AND CAUSES OF SURGICAL DISEASES.

ART. 53.—*Necrosis of the Jaw-bones, produced by the Fumes of Phosphorus.* By G. W. BALFOUR, M.D.

(*The Northern Journal of Medicine*, May, 1845, p. 284. *Transmitted from Vienna.*)

The attention of Dr. J. W. Loriuse was drawn to the cause of this disease from the fact that since the erection of the hospital, (Bezisks Krankenhause Wieden) necrosis of the jaw-bones was never observed, save in the persons of such as had been employed in the manufactories of lucifer-matches, three of which are in its immediate vicinity. These persons were all females employed in dipping the pieces of wood into the phosphoric mixture (phosphorus and a solution of gum arabic, with a little colouring matter). In the entire number of manufactories 150 to 160 of these girls are employed, whose ages range from 8 to 25 years, the greater number being under 14. On examination of the state of these manufactories, it was found that in one, the matches were dried in boxes hung around the wall of the room in which the girls were at work, and the ventilation was carried on only by means of small windows situated aloft, the temperature ranging from 18° to 30° R. This was higher (averaging 30° R.) in the other two manufactories; but, in these, portions of the work-rooms were partitioned off as drying apartments, and provided with tubes to carry off the noxious fumes. These partitions, however, required to be frequently opened and the matches looked after, lest they should ignite, which, from the high temperature employed, frequently took place; and also to replace the matches already sufficiently dried with fresh. In each manufactory from three to four pounds of phosphorus are daily employed in the production of one million to two millions of matches, the mere drying of which must give no inconsiderable quantity of phosphoric fumes, to which must also be added the quantity of phosphoric acid produced by the burning of sundry parcels, which, in spite of care, is no unfrequent occurrence. Yet in these rooms, exposed to the heat and fumes, the girls pass from 12 to 13 hours daily, and even take the most of their food there.

It would appear probable that an exposure for a length of years to the fumes of phosphorus is necessary for the production of this specific effect, from the circumstance that no case of it was observed till 1839, when the manufactories had been in work upwards of eleven years. Since then more than a dozen cases have come under our notice. Scrofulous girls suffer most, and in them the disease is most fatal, and in no case but the first has syphilis, primary or secondary, been discovered.

Almost all the girls employed have the gums more or less affected, and at their junction with the teeth a red ulcerated line, like that produced by mercurial salivation, is apparent. The pain in the jaws, where any is complained of, is generally mistaken for toothache, and for this teeth are frequently extracted, which are afterwards found to be quite sound. As the disease proceeds the affected jaw-bone increases in size, and is painful on pressure. This is followed by swelling of the gums and cheeks, with an erysipelatous inflammation of the skin of the latter,

which sometimes extends over the whole of that half of the face, and even down on the neck. The patient becomes feverish; the skin of the whole body, but particularly of the face, assumes a dirty yellow colour. The appetite declines and thirst increases, with irregularity of the bowels. The pains now extend towards the ear or temple, the flow of saliva is increased, nay, even complete salivation occasionally occurs. Some of the teeth become loose, stinking matter oozes from between them and the gum, which also collects in portions of the jaw under the gum or skin, and, after burrowing for some distance, opens outwards or into the mouth, forming numerous sinuses, which, on being probed, lead to a greater or less portion of bare rough bone. The loose teeth now fall out, and the soft parts in the mouth are partially destroyed, so that a portion of the necrosed bone projects naked into the mouth, and from the copious secretion of pus produces an unendurable stench.

The general symptoms are those of great irritation, and in the hitherto observed fatal cases, those of confirmed and rapid phthisis.

When the individual is robust, and the necrosis confined to a small portion of the bone, exfoliation takes place, and a gradual cure follows.

On the contrary, when the individual is scrofulous, phthisis becomes developed, and the patient sinks under the combination, after an illness rendered more distressing by the horrid stench and unallayable pain accompanying it. Dissections have hitherto given extensive necrosis of the jaws, and destruction of the soft parts, along with advanced tubercular disease of the lungs and intestines. The means employed have been, in mild cases, the use of astringent washes, warm poultices to the swollen face, general warm baths, gentle exercise in the open air, bitter tonics, and a light but nourishing diet. When the process of destruction advanced, spirituous and aromatic additions were made to the astringent washes, and the sinuses frequently washed out; when the salivation was profuse, the frequent use of cold water was found to afford the most relief. The most powerful narcotic gave only slight alleviation of the intense pain, especially remarkable in disease of the upper jaw. On account of the disagreeable smell, complete separation of the sick from the other patients was found, in many cases, necessary; and in all, careful ventilation and frequent fumigation with juniper wood or nitric acid. Dr. Sigmond, in one case, touched a portion of the upper jaw with a hot iron; the bone exfoliated in four days, and a gradual recovery followed. (*Vide Report on Surgery.*)

ART. 54.—*On the Accidents which result from the Puncture of a Nerve. Cause of Neuralgia.* By M. AUG. BERARD, Surgeon to La Pitié.

(*Condensed from La Nouvelle Encyclographie*, April, 1846, p. 137.)

At the moment when a nerve is pricked the individual experiences an extremely sharp pain at the site of the wound, which radiates through the divisions of the nerve to the parts where it terminates. Sometimes the pain proceeds upwards towards the origin of the nerve. Having continued some days, rendering the motions of the part difficult, or preventing motion, it usually subsides, but is sometimes followed by more or less serious accidents, as excruciating pains, convulsions, tetanus, spasmodic contractions; usually confined to the parts to which the wounded nerve is

distributed, and occurring in paroxysms accompanied with more or less suffering, occasionally extending over the whole body; and if the inferior limbs are involved, the patient is unable to walk or to support the motion of a carriage; or obstinate neuralgia may occur a considerable time after the infliction of the injury.

M. Bérard, in his own person, experienced neuralgia from a prick of the frontal nerve. For the purpose of a galvanic experiment a needle was forced into the external branch of the ophthalmic nerve, as it proceeds from the supra-orbital foramen, and an electric current was directed throughout the division of the nerve. At the instant, violent pains were felt over the forehead and crown of the head. The pains ceased when the needle was withdrawn, but some months afterwards a fresh attack of neuralgia was experienced in the division of the wounded nerve. The pain had the quotidian intermittent type, and gave way to the use of sulphate of quinine. Since this period repeated attacks of neuralgia have occurred, with many years' interval, some of which were excessively violent and long continued, and always seated in the frontal branches, but sometimes extending to the nasal and lachrymal branches of the ophthalmic nerve.

A young person met with a cut with a penknife, in the forearm, above the wrist. A violent pain was felt in the forearm, wrist, and fingers; this was soon followed by spasms, while the voluntary motions of the fingers were either incomplete or impossible. Subsequently the spasms became general, and for two years the individual led a most miserable existence; the case being ultimately cured by repeated applications of the actual cautery. Similar symptoms occurred in a young woman, from a wound above the wrist, inflicted by a piece of glass, probably injuring the median nerve; and the following detail is drawn up from the case of a woman at present in La Pitié, with a similar affection, having been bled at the fold of the arm some time previously.

Diagnosis.—The symptoms of a puncture of a nerve cannot be confounded with those of any other disease. A wound corresponding with the site of a nerve, the pain propagated along the nervous filaments, tremblings, and convulsive movements, which resist all ordinary remedies, leave no doubt of the nature of the affection.

Prognosis.—The accident is in general exempt from danger, the pain ordinarily ceasing after a few hours, or at most a few days, but the disease becomes very serious when spasm, convulsion, and neuralgic pains continue. The patient may become the subject of continual torment for many years, and of sufferings which produce their influence over the whole economy. Happily these results have been observed in a few cases only.

Treatment.—When the wound is recent—rest, antiphlogistics, and opiates, the latter being indicated when the symptoms persist; friction in the course of the nerve, with oil and laudanum, or hyoscyamus, bathing the limb with decoction of poppies or of belladonna, the application of morphine by the endermic method, &c. But the disease, when fully established, most frequently resisting these measures, there remains no other resource but to destroy the affected nerve; for which purpose cauterization or incision may be employed. The first, although most painful, destroys a greater portion of the nerve; one application rarely succeeds. When incision is resorted to it should be done two or three centimetres

from the wound, towards the nervous centre. The purpose may, perhaps, be equally well effected by subcutaneous section. In the few cases in which this operation has been resorted to the symptoms have subsided the moment the nerve was divided.

Pathological Anatomy.—The puncture of a nerve produces a circumscribed tumefaction in its substance, with effusion of blood into the cellular tissue between the nervous filaments and within the neurilema. When the symptoms of acute inflammation have subsided, and the absorption of the effused fluid has taken place, there remains, according to Wolff, Béclard, and Descot, either in the whole thickness of the nervous cord, or, if the puncture has been very limited, at one point of its circumference only, a hard, opaque swelling, of a fibrous consistence, which is invariably formed by a thickening of the cellular-fibrous tissue. This tumefaction may furnish a useful indication where accidents of this kind have resisted the ordinary curative means.

Art. 55.—*The Transitions of Cancerous Disease.* By Dr. O'Ferrall.

(*Condensed from the Dublin Hospital Gazette*, April 1, 1846, p. 254.)

[The author's observations are intended to establish the identity of scirrhus and encephaloid, we propose again to allude to them in the article "Cancer," of our Report.]

A woman, aged 50, of well-marked cancerous aspect, was admitted to St. Vincent's Hospital for a cancerous tumour of the left labium, there being also a large cancerous mass in the right groin. The tumour of the labium was in the ulcerated stage, and exceedingly hard; that in the groin was of a softer consistence, exemplifying the disease termed encephaloid; there was no evidence of visceral disease. The woman was in a sinking condition, worn out by great pain and diarrhœa, for the relief of which palliatives were administered during three months, at the end of which time she sunk under the frequent recurrence of these attacks of diarrhœa. During this period, too, the tumour in the groin sloughed, leaving an enormous cavity. The only attempt made at examination was upon the patient's admission; and with respect to the viscera, it may be observed, that subsequent examinations discovered no trace of any tumour connected with them. The tumour of the labium displayed a series of cancerous masses, hard, firm, and gristly to the touch, leaving no doubt whatever as to their cancerous nature. That of the groin was of a softer consistence, the cavity remaining very like that which is seen after the sloughing of fungoid tumours. Upon throwing up the abdominal flap, a tumour was discovered lying in the sheath of the rectus muscle, presenting the distinct characteristics of encephaloid disease, and separated from the intestines only by the peritoneum. This tumour must have been developed during the three months that followed the patient's admission into the hospital, for had it existed when she came in it could scarcely have escaped detection. It was obvious, then, that in the same case were displayed three modifications of malignant disease: one a scirrhus of the labium; the next, of a mixed character in the groin; and the third, a well-marked specimen of medullary disease in the sheath of the rectus. The lungs and liver were entirely free from any abnormal deposit; they

presented, in fact, no trace of disease, and the escape of these important organs after the lengthened persistence of the discharging mass is a fact of much interest—as showing that we are not to suppose a case of malignant disease *necessarily* accompanied with contamination of the intestines or lymphatic system. From this it would appear, then, that we are not to be deterred from removing these external tumours, through fear of internal organs being involved, since it is seen that in this instance the disease ran its whole course, leaving the lungs, liver, &c. entirely exempt. The case possessed another point of interest also, viz. the coexistence of true scirrhus and encephaloid disease in the vicinity of each other, a fact which must set at rest the question (if there be any one who still entertains a doubt on the subject) of the essential identity of these two varieties of malignant disease.

Dr. O'Ferrall exhibited several drawings illustrative of this statement, one, in which true encephaloid disease sprung up in the cicatrix remaining after the extirpation of a female breast; another, still more remarkable, in which a large cancerous tumour of the vagina and uterus, encroaching on the bladder, presented at one end true scirrhous characters, while at the other extremity it was of a genuine fungoid nature. Here were three specimens of the concurrence of all the varieties of malignant disease in the same subject, coexisting in the first case, consecutive in a second, an continuous in the same tumour in the third.

Art. 56.—*New Theory of the Origin of Solid Bodies found in the Cavities of Synovial Membranes.* (*Oester. Medecin. Wochenschrift. Boston Med. and Surg. Journ.* Mar. 25, 1846, p. 168.)—Dr. Bidder was led to form his opinion from an examination of a substance evacuated from the knee-joint of a patient, who had for a considerable time been suffering from symptoms indicating the presence of a foreign body therein; a natural opening formed, through which a granular substance was evacuated; the individual granules of which this substance was composed were uniform in size and general characters; they were flattened and oval, about a line and a half in length, three fourths of a line in breadth, and half a line in thickness: they were of a yellowish white colour, presented no traces of a pedicle, and were held together in heaps of various sizes by a very small quantity of a greasy transparent fluid. They were highly elastic, and when cut into presented, both to the naked eye and beneath the microscope, a perfectly uniform surface, there being no appearance of laminæ, of a nucleus, of a surrounding capsule, or of any fibro-cellular tissue; they presented none of the characters of epithelial cells, or of oval fat-cells. Neither ether nor acetic acid detected in them any traces of fat; they were unaffected by water, but by the action of alcohol were shrivelled up. From these facts, it appeared to Dr. Bidder that the explanation offered by Meckel and Hyrtle respecting the formation of these bodies from fat, could not be regarded as the only one; but it seemed very probable that the epithelial cells were in his case, and perhaps in others, the cause immediately concerned in the formation; that the cells, under the influence of increased vascularity of the synovial membrane, are abundantly thrown off and accumulate in the cavity of the joint, where, by a process of endosmosis, or in virtue of their own

peculiar vitality, they increase in size by abstracting nutritive material from the synovial fluid in which they are immersed. This view would seem to be especially favoured by the large quantity of albumen which the little bodies contained, and by the uniform size which they presented.—*Vide Report on Surgery*, "Injuries and Diseases of the Joints."

ART. 57.—*Fracture and Dislocation of the Cervical Vertebræ, with Fracture of the Sternum.* By PETER BROTHERSTON, Surgeon, Alloa.

(*Condensed from the Northern Journal of Medicine*, May 1846, p. 287.)

A mechanic, æt. 22, at six p.m. of the 30th November, was found lying across the foot-pavement in the public street. After being carried home, and put to bed, he could speak and answer questions; he was quite unable to move his lower extremities, but could move his arms to a considerable extent; he passed a restless night and moaned a good deal, but his friends supposing him to be intoxicated, thought nothing of it till morning, when I saw him in bed, perfectly sensible, and able to answer all questions put to him. He complained of great pain on the crown of the head, stiffness of the neck, and could not move his limbs when ordered; he could move his hands and arms, but could not put his hands to his head. He also complained of pain in the chest, and seemed to be very much oppressed. His pulse was 96, full, and strong. On asking him if he met with any injury, he said that he did not remember; that he had taken too much whiskey yesterday, and had been tipsy. I ordered a purgative, and called again in the afternoon. The purgative had not operated, and he appeared more distressed than in the morning; pulse 100, not so strong. He still complained as in the morning, and said he had made no water. I drew off about two pounds and a half of urine. After withdrawing the catheter he said he felt sick, and wished a mouthful of water. It was difficult to give him anything to drink in the position in which he was lying, his head being on a low pillow, and in order to get the vessel to his mouth his head was raised. The moment his head was raised he gave a convulsive struggle, and expired. *Autopsy 24 hours after death.* Removing all support from the head, it immediately fell to one side, so that whenever the occipital protuberance rested on the table, support being removed, either cheek came in contact with the table, though cadaveric stiffening still remained throughout the body. When the head was pressed downwards, so as to force the vertebræ upon one another, and rotated, crepitus was heard.

An immense quantity of blood was extravasated between the scalp and the tendon of the occipito-frontalis muscle, immediately over the crown of the head. The skullcap was free from fracture, and the membranes and brain natural. No fracture or fissure was found in the base of the skull.

On cutting through the integuments and muscles covering the spinous processes of the cervical vertebræ, the muscles and cellular tissue were found infiltrated with blood, and displacement forwards of the last cervical vertebra on the first dorsal was observed. The posterior ligaments were so torn as to expose the membranes covering the spinal marrow. The last cervical, and first three dorsal vertebræ were removed, and the fol-

lowing state of parts was seen: there was found to be a fracture of the body of the first dorsal vertebra through the middle and the upper part of the body adhering to the invertebral cartilage, behind it and the last cervical, and overlapping the other half anteriorly. The inferior oblique processes of the last cervical were thrown in front of the superior oblique processes of the first dorsal, and the capsular ligaments were ruptured. The spinal membranes over the chord seemed to be entire, but the chord was flattened, and probably ruptured within the membranes. On dividing the costal cartilages, and removing the sternum, it was found, on examining the posterior surface, that the entire bone was fractured across in an oblique direction upwards and towards the left side, exactly at the junction of the lower with the middle third of the bone. There was no displacement, and no appearance of injury on the anterior surface. The thick tendinous periosteum kept the two portions in complete apposition. There was considerable effusion of blood into the anterior mediastinum, and into the cellular tissue between the pleura and the bone around the seat of fracture. There was also effusion of blood on the external surface of the pericardium, but it did not extend to the internal surface of the membrane. The heart and lungs were in a healthy condition.—*Vide Report on Surgery*, art. "Injuries of the Vertebræ."

Art. 58.—*Caries of the Cervical Vertebræ.* By M. Cruveilhier.

(*Condensed from the Gazette des Hôpitaux*, 21 July, 1846.)

A man 50 years old, who had never before been ill, was seized with severe pains at the back of his neck, and inability to move his head towards the right shoulder, which continued during two months. Cataplasms, leeches, and blisters were applied unsuccessfully. An abscess formed on the right side of the neck, which, having been opened, discharged blood and matter. Four or five days afterwards, cramps and violent pains occurred in the right arm, which were followed by complete paralysis. A few days after this, similar symptoms came on, first in the right and then in the left leg, followed also by paralysis of these parts.

The paralysis was complete, the patient having no power of motion, even of the toes, although, by striking the muscles of the leg directly, they might be made to contract feebly. The left arm was much more feeble than natural, but the patient could still use it. The head was bent towards the left shoulder, but the patient could raise and incline it slightly to the right, without being able to move it to any considerable extent in this direction. The senses maintained their integrity, and the general sensibility was intact. Stools involuntary; incontinence of urine; sensation of a bar across the chest, and respiration confined; skin hot; pulse 100, full and strong; no appetite; deglutition easy; no tumefaction could be detected at the bottom of the throat; tumefaction, ill-defined, at the superior and posterior part of the neck, with a little redness of the skin, but without fluctuation; on following the spinous processes from below upwards, they appeared with the whole neck to incline to the left. Cupping-glasses and cauteries were applied; a large eschar formed on the sacrum; the prepuce became gangrenous, and the patient died.

Autopsy.—The superficial muscles of the neck were healthy; the deep

muscles, at several points, had begun to assume the fatty transformation, particularly the oblique muscles of the head, which were nearly destroyed, and impregnated with a fetid sanies. The spinous processes, and the arches of the second, third, and fourth cervical vertebræ, were completely denuded of periosteum; the osseous substance was blackish, and as it were macerated; a probe penetrated freely between these vertebræ to the medullary cavity; the articular surfaces of the third, with the inferior articular surface of the second, and the superior of the fourth vertebra on the right side were carious, and bathed with the same kind of fetid sanies as the muscles. At that part of the spinal marrow which corresponded with the diseased vertebræ, on the outside of the membranes, there was a soft material, acting as an additional membrane, and producing compression. It was impossible to determine whether this material was a deposit of lymph or of tubercular matter. The membranes of the spinal marrow were thicker and more resistant than ordinary, in their whole extent, and the spinal marrow had the same degree of tenacity throughout, the only remarkable circumstance being, that on the level with the diseased vertebræ it was in a manner strangulated, and slightly congested. The strangulation appeared to extend through the circumference of the cord.

The question arises whether the disease depended upon a simple caries, or upon tubercular disease; but it is difficult to believe that the latter would occur at that period of life, and there was no other evidence of tubercles than the matter which formed a species of envelope to the dura mater. Another point, difficult to understand, is the fact of the left arm preserving its motor power, while the leg on the same side was completely paralysed; and, again, that the sensibility was maintained over the whole body, although the spinal marrow appeared to be strangulated through its entire circumference. Is it to be inferred, that sensation is transmitted rather through the centre than by the posterior fasciculi of the marrow? The facility with which gangrene resulted from pressure, is also an additional fact, showing the influence of the innervation in the vitality of organs.

ART. 59.—*Morbus Tuberculosus Pedis. A Disease of the Foot not hitherto described.* Reported by J. GODFREY, Garrison Surgeon at Bellary.

(*Dublin Medical Press*, June 10, 1846, *from the Lancet.*)

A man named Groonacloo, about 30 years of age, a Gentoo patkee-bearer, but usually employed in catching fresh-water fish from the tanks in the district, says, that about three years ago he first observed a small hard lump on the right foot, which remained indolent for a considerable time, and then formed a small circular ulcer. During this period, and previously, his general health was good. Other lumps formed and ulcerated. The affection, though not accompanied with much pain, yet was not attended by any loss of sensation. None of his relatives have been similarly affected; and his daughter, about six years old, appears to be perfectly healthy. He is much emaciated, unable to stand, and propels himself about in a sitting position by his hands. Nearly the whole of the foot, both on its dorsal and plantar aspects, is honeycombed, with small indolent ulcers, which appear abrupt at their margins, and deep, from the induration and thickening of the integument, and have at the bottom a

whitish-coloured, loosely adherent substance, apparently thickened cellular tissue. The foot is altogether, though not greatly, enlarged. Its remaining integument retains the normal colour, feels preternaturally hard, and has slightly elevated tubercles on its surface, some in a state of incipient ulceration, some round and smooth, having a partially detached cuticle on the surface, somewhat depressed on the summit with moist crusts. The nails on the toes remain entire. Ulcerations of a less indurated character surround the leg half way up on the anterior part, and posteriorly there is an ulcer about the middle of the calf, not possessing in any degree the indurated character of those on the foot. From this ulcer a sinus extended downwards, which was laid open shortly after admission, with a view to heal the part previous to operation; but as there was no disposition to cicatrization, it was not deemed expedient to make further delay.

Amputation below the knee was performed 27th July, 1844. The muscles of the leg were soft and attenuated, and for the purpose of covering the stump as far as possible with sound integument, a convex flap, about two and a half inches in breadth, was dissected up from the anterior part of the leg, and another short flap made by transfixing the muscles at the back, which unavoidably involved a small portion (about half an inch) of the ulcerated integument on the calf. Three arteries were ligatured, (anterior and posterior tibial, and a muscular branch); the parts healed very favorably, and the man was discharged, stout and healthy-looking, at the expiration of nine weeks, having been detained some time longer than might have been absolutely necessary.

On examination of the limb after amputation, the integuments of the foot were found thickened, of a firm brawny consistence, and studded with tubercles of a pale brown or fawn colour, exhibiting, when divided, distended blood-vessels in the interior, having a circular arrangement. Some of the tubercles were round, others somewhat of an almond shape, varying in size from two or three lines to nearly an inch in length. Some of these, superficially situated, had recently degenerated into ulceration, and others of a smaller size had extended inwards to and between the bones. The periosteum, in many places, was entirely absent, and in others easily detached, white-coloured and thickened. The extensor tendons were partially destroyed, and around them a gelatinous mass was deposited. The tendo-achillis was entirely destroyed, and its situation occupied with a fatty-looking jelly. No vestige of muscular structure remained on either aspect of the foot. In the leg, the muscular fibres were distinct, but attenuated, soddened, and of a pale tawny colour, having in the interstices streaks of straw-coloured matter imbedded in the cellular tissue. The gastrocnemius and soleus muscles at the point of amputation were nearly normal in colour, but the pale appearance, though in diminished degree, extended throughout the extensor and deep-seated flexors of the leg. The bones of the foot had a worm-eaten appearance, and covered with osseous deposit, feeling rough to the knife. I may here mention, that the bones have been recently taken out of the ground (after having been buried four months), and drawings have been made of three of them, which very accurately exhibit the worm-eaten appearance and osseous deposit on the surface, extending within a few inches of the upper amputated end of the fibula. The tibia is also similarly affected, though in lesser degree. The total

loss of weight in the tarsal and metatarsal bones, weighed against dried bones which have been in my possession for more than ten years, is upwards of one half.

[Three more cases are given, apparently identical, for which amputation was also performed with success, and several other cases are mentioned. One was of four or five, and another of eight years' duration. In one case there was a cyst, or excavated tubercle, about the size of a small walnut, containing melanotic matter, quite black, extending from the plantar to the dorsal aspect of the foot, between two of the metatarsal bones, which were in part absorbed. Mr. Godfrey at present considers this as an accidental product, not forming part of the peculiar disease, which, he goes on to state, is dissimilar in several respects from any disease he has been able to find recorded in books, possessing many of the characters of elephantiasis of the Greeks, yet differing in various particulars, being without thickening of the lips, nose, lobes of the ears, hoarseness of the voice, anasthesia, and falling off of the phalanges, being in fact apparently a local tubercular affection.] The disease appears to be known to the natives by the name of *ghootloo mahdee*, from the tubercular irregularities being supposed to resemble "eggs." The description previously given shows the disease to be dissimilar in several respects from any recorded by systematic writers(so far as I am aware), and with characters sufficiently distinct from *vullay koostum* (white leprosy), *kurpoo kooshum* (black leprosy), or *anaekal* (Cochinleg), the only diseases with which it is likely to be confounded.

Art. 60.—*Calculi of the Prostate Gland.*—A patient was sent to M. Lenoir, under the impression that he was labouring under vesical calculus. On introducing the sound, M. Lenoir found an obstacle which gave a clear sound, and which he thought was a vesical calculus; but on examining digitally by the rectum, he failed to recognize its presence. On exercising pressure, however, on the prostate he caused the escape of about fifteen small calculi. They were of a dark yellow colour, and presented facet surfaces; when burnt, they gave a decided animal odour. The patient who, when he entered the hospital, had all the symptoms of serious vesical catarrh, left nearly well. A few months later he was again sent to Paris, under the idea that he was suffering from vesical calculus, and a number of small stones were again emitted, by pressure of the prostate. Vesical catarrh was present, as on the first occasion. M. Lenoir thought that the calculi were formed in the ejaculatory ducts, and that it was because they occupied the orifice, that they produced, when touched with the sound, the sensation of a stone in the bladder.

M. Nelaton had met with a case at the Hôtel Dieu, similar to the one of M. Lenoir. The friction of the sound over a hard substance in the region of the prostate had led him to recognize the presence of prostatic calculi. He managed to withdraw several by means of lithotritic instruments, and the patient left apparently cured. Two months afterwards he returned with the same symptoms, indicating prostatic calculi, and with a vesical calculus in addition. M. N. was not able to lay hold of the latter, in order to crush it, and was obliged to perform the operation of lithotomy. On scratching the surface of the incised prostate with his nail, he managed to make several calculi fall, similar to those described

by M. Lenoir. The patient was cured. M. Michon, M. Guersent, and M. Laugier, thought that prostatic calculi were not rare; M. Malgaigne was of a contrary opinion.

ART. 61.—*Sudden Enlargement of the Thyroid Gland.* By DR. PALMER.

(*The American Journal of the Medical Sciences.*)

Dr. Palmer was suddenly summoned to an old lady long subject to bronchocele. On his arrival he found her extended on a couch with her shoulders elevated, and her head reclining backwards; the countenance anxious and pallid, and respiration apparently hurried. There was an enormous tumour over the region of the thyroid gland, extending in front of the trachea, which was reported to have formed in a minute. It was at first tense and elevated; the patient complained of constant pain about the ears and back part of the head. The sterno-mastoid muscles were forced outwards, and put violently on the stretch by the pressure of the tumour. On the second day its base began to spread laterally; it became softer, in a few days more began spontaneously to diminish, and has since resumed the appearance of a very inconsiderable goitre. The vertical circumference of the tumour was three inches and a half; the lateral circumference, from one edge of the base to the opposite edge, five inches and one line. Dr. Palmer attributes the sudden increase in size of the thyroid gland, in this case, to the rupture of one of the thyroid arteries; most probably, however, a branch only of those arteries was ruptured; the hemorrhage would hardly have ceased so soon, and its effects have been so speedily removed, had a vessel of such size as the thyroid been pouring out blood into the parenchyma of the gland.

Condensed from the Medical Times, May 23, 1846, p. 139.

ART. 62.—*Emphysema of the Eyelid from Rupture of the Lachrymal Sac.* By M. F. DUBOIS, of Neufchâtel.

(*Journal de Chirurgie*, Mai, 1846.)

CASE. A man, aged 50 years, consulted me about four or five years ago respecting an enormous tumour which had formed suddenly upon his right eye. Half an hour previously, on lifting a trunk, he received from a person stooping, and who raised himself suddenly, a violent blow with the head, upon his right eye. The eye was not wounded, and the man, a little while afterwards, not thinking of the accident, blew his nose, and was very much frightened on finding that he had totally lost the sight of the eye, and that a large swelling had taken place.

The right eyelid, and the skin around it, as far as the middle of the forehead and of the face, were raised and formed a tumour of the size of an orange. This soft, colourless, and elastic tumour, from the existence of crepitation, and from the manner in which it had appeared, could leave no doubt of the existence of a rupture of the lachrymal sac. In a few minutes M. D. made the air return through the passage which it had entered, by kneading the tumour, and pushing its contents towards the in-

ternal angle. The patient was recommended not to blow his nose for several days, and when he did so again, to apply the end of his finger upon the superior opening of the lachrymal canal. The emphysema did not return.

ART. 63.—*Simultaneous Dislocation of both Femora.*—[This case has been transferred into several English and French journals from the 'Gazetta Toscana della Scienze Medico-fisiche.'] A peasant, 30 years of age, was thrown violently to the ground out of his cart. He could not rise, even with assistance, and experienced severe pain in the right flank. He was immediately conveyed to the hospital, and M. Andreini discovered a dislocation of the right femur upwards and outwards, which was reduced four days afterwards. At the time of admission something abnormal was noticed in the left limb, but as the patient did not complain of pain, and said there was always something wrong with it, and the bone was found not to be broken, no further notice was taken of it at the time. After the right femur had been reduced, it was found impossible to bring the legs together, and the left appeared longer than natural, and turned outwards. It was then discovered that, although there still was no pain, the left femur was dislocated downwards and inwards; the deformity spoken of by the patient merely consisted in a slight enlargement of the knee-joint. The dislocation was accordingly reduced, and the patient completely recovered.

ART. 64.—*On a Law of the Formation of local primary Abscesses exterior to the Bone after Fractures by Contre-coup and complicated Luxations of the Long Bones.* By Dr. S. LAUGIER, Surgeon, Hôpital Beaujon, &c.

(*Condensed from the Archives Gén.* June, 1846, p. 133.)

There is an evident relation between fractures of the long bones by contre-coup and luxations of their articular extremities; it is the sudden displacement, more or less considerable, which occurs in *luxation* of the articular extremity, and in *fracture* of the superior fragment especially; although sometimes of the inferior fragment, or of both fragments at once. In both cases, a portion of a long bone constitutes a lever of variable length, under the influence of a force, also variable, but which has overcome the articular connexions, or the resistance of the bone, and is frequently by no means spent, after the luxation or the fracture has separated from the normal position and traversed a longer or shorter course in its unnatural direction.

This displacement, essentially different as to its cause, from the consecutive displacement which the contraction and shortening of the muscles produces, cannot take place without great injury to the surrounding parts. Hitherto, attention has been paid particularly to the injury produced by the pressure of the articular head, or the extremity of the fragments, as, for instance, the rupture of the capsule, muscles, integuments, and vessels situated in the course of the displaced bone, or their puncture and rupture by the points of the fragments; but, on the contrary, very little attention has been paid to the violence produced on

the soft parts in contact with the bone, and situated on the side opposite to that in the direction of which the displacement occurs; yet, in the production of primary and consecutive, and often mortal results, these traumatic lesions, nearly imperceptible at first, become of the highest importance. One cause for the more frequent formation of abscesses in this situation is, that the injury of the cellular tissue is most extensive, and that its deep situation, at a distance from the accidental opening, gives facility to accumulations of pus.

The extent of separation of the soft parts from the surface of a bone is always greatest in this direction. Fractures of the leg by contre-coup generally occur at the union of the inferior and middle third of the tibia, and their obliquity is from without inwards, and from above downwards. Admitting in this case that the superior fragment has traversed the integuments, and produced a projection of an inch in extent on the inner surface of the leg, if, before reducing the fracture, we investigate on which side of the bone there is most injury to the soft parts, it is found to be on the outer side. It is true that the integuments are penetrated on the inner side, and the bone projects; but above the projection the soft parts continue adherent to the bone. On the external side, the separation of the bone from the neighbouring soft parts, and the rupture of the cellular tissue, extends about two inches and a half to three inches, for a projection of an inch of fragment through the skin, The separation of the projecting fragment and the muscles, with which, in its normal state, it is in contact, may be measured, as it were, by a pyramidal space, the summit of which is above, the base represented by the thickness of the tibia at the seat of fracture below, and the height of which, is from two to three inches. If the reduction is not complete, the space remains, immediate reunion is impossible, and it becomes a focus of suppuration. After complete reduction there would be internally a sort of cavity, the bottom of which would be the bone, and the superficies the skin; but the latter being ruptured, so long as the wound has not united, there can be no collection of pus; if the wound is reunited, and the pus accumulates under the skin, it will frequently find its way out by separating the edges of the solution of continuity, or it can be easily discharged. On the external side of the bone, on the contrary, if the apposition of the separated parts has not been effected, which frequently happens in complicated fractures, and is not without example in simple ones, the suppuration has a tendency to increase the separation; instead of finding its way to the external surface, even though the wound remains open, the pus ascends, and the dépot is extended lengthwise: it forms, along the tibia, between the two bones, before or behind the interosseous ligament, often in both situations, an extensive abscess, which is almost always tardily detected. This abscess may become of an enormous size, before any external manifestation takes place, and what is true of the tibia, is so also of all the long bones; primary abscesses occur under the surface, opposite to the side in the direction of which the displacement is made, behind, if the displacement is forwards, externally, if it takes place inwards, and internally, if the bone is displaced outwards.

The same law exists for complicated luxations of the long bones. It is on the side opposite to the direction taken by the head of the

bone, that is the principal seat of inflammation and abscess. Here, the injury of the neighbouring soft parts is still greater than in fractures; there are luxated and ruptured tendons, the insertions of muscles torn, and the muscles themselves bruised and lacerated. The violent effects of the displacement of the articular head are more marked, because the force being the same, the arm of the lever is longer, but, on the other hand, in fractures we have the solution of continuity of the bone, of its vessels, and of the medullary canal.

I have for years observed, in luxations of the first metatarsal bone, that an abscess always takes place on the outside of the reduced bone, on the instep; and to prevent this purulent collection, it is essential to make an incision along the external side, parallel to the edge, and down to the bone.

The knowledge of the law here indicated has enabled me to save many limbs. I have been able on this principle to make a preventive counter-opening, or otherwise to direct the treatment towards this point, as by local bleeding, emollient applications, pressure, &c. No author has hitherto assigned a seat of election for deep-seated abscesses, after luxations and complicated fractures of the limbs. [The author's observations are followed by a series of illustrative cases.]

Case 1. A compound luxation of the great toe on the first metatarsal bone. An abscess formed on the external edge of the latter, on the back of the foot. 2. A similar accident, and an abscess opened in the same situation. 3. A similar accident, with the formation of two abscesses seated as in the other cases. 4. A similar accident, with the same result; but an incision having been made, the suppuration was very trifling. 5. Luxation of the elbow, extracted from Sir Astley Cooper's work. The condyles of the elbow projected through the skin at the interior of the articulation, the humeral extremity being completely exposed. Reduction, after a few days' suppuration in moderate quantity from the wound; but pains occurred in the arm, and extended to the shoulder. After five or six days an abscess formed at the external condyle, which was opened, and two ounces of pus evacuated. The case did well. 6. Compound luxation of the elbow inwards. There was also a fracture of the inferior extremity of the radius. After a few days, pus accumulated above the internal condyle, which was evacuated night and morning by suitable pressure, the pus passing before the articulation, to make its exit by the wound. A few days later, the abscess presented towards the posterior and external side of the humerus, but pressure still sufficed for its evacuation, and hence, by a knowledge of the precise seat of the abscess, the necessity of a counter-opening was avoided. The case proceeded to a favorable termination. 7. Luxation of the elbow inwards. In this case, a deep counter-incision was made, down to the bone, through the triceps muscle, with the greatest advantage, but after some weeks, the patient had a consecutive abscess from injury of the soft parts of the arm, with phlebitis and purulent absorption. 8. Luxation of the foot. The malleolus internus was separated, the inferior extremity of the tibia projected through the skin internally. The only abscess which formed was behind the tibia. 9. Fracture of the leg by contre-coup. The superior fragment projected inwards, the reduction was incomplete, and an abscess formed on the anterior part of the leg. The

seat of the abscess was on the external side of the tibia. 10. Fracture of the arm. The wound was situated on the interior and anterior surface of the arm ; an abscess formed on the posterior part.

Do simple luxations and fractures by contre-coup escape the preceding law?

We know that they are accidents of the same nature as the more complicated, differing only in degree. Also, that consecutive and more lingering abscesses, which sometimes follow simple fractures, have their seat on the side opposite to the displacement; but the coaptation of the parts takes place without suppuration much more frequently than in fractures with a wound. In simple luxations, although there appears to be neither ruptured integuments, nor concomitant fractures, nor large vessels or nerves injured, complications and lacerations, at first unperceived, often in reality exist. We are sometimes astonished at the lacerations detected on a careful examination after death of the parts surrounding an articulation ; and at the same time it may be proved, that frequently the most serious lacerations occur on the side opposite to the seat of displacement of the head of the bone. Thus, as respects the head of the humerus, we find, in the luxation downwards a rupture of the supra and infra-spinatus, &c. &c. In luxations of the femur outwards, the pyramidal, quadratus, gemelli, obturator, and pectineus are torn.

Is not the explanation of the frequent relapses, of the partial and incurable paralyses after luxations believed to be simple, to be sought for in these injuries?

The law that serious injuries occur on the side opposite to the direction in which the displacement takes place is then a general law, the application of which is only of more importance in compound than in simple luxations and fractures.

SECT. III. TREATMENT OF SURGICAL DISEASES.

ART. 65.—*Treatment of a peculiar form of Disease of the Prostate Gland.* By W. COLLES, Esq.

(*The Dublin Journ. of Med. Science*, and *London Med. Gazette*, May 15, 1846, p. 879.)

There is a description of enlarged prostate in which surgery can render essential benefit to the sufferer, and that by a very simple operation. When we find a patient in advanced life complaining of unusual frequency of micturition, with more than an ordinary straining, his urine depositing a good deal of muco-purulent sediment, and, possibly, a muco-purulent discharge from the urethra, we should make a very careful examination of the state of the prostate. If, under these circumstances, we introduce the finger into the rectum, and find the gland enlarged in either lobe, and upon pressing on one particular spot we feel the point of the finger sink, as if into a cavity, and particularly if we find this pressure causes the discharge, *per urethram*, of a quantity of this purulent fluid, to the amount varying from a few drops to a teaspoonful, here we may hope to render an essential service. The operation is simply that of

incising this hollow soft spot, which will generally be found to contain some matter. Mr. Colles has employed the pharyngotome, having previously adjusted the instrument so as to allow the lancet to project only to a length varying from one eighth to half an inch, according to the apparent thickness of this soft part; the object being to make an opening into this cavity. The operation causes very slight pain indeed. We are guided to the spot where the puncture is to be made by holding the point of the fore finger of the left hand gently pressed on the soft part, and introducing the finger on this as a director. In some of these operations there has been incontestable proof that some pus had been contained in the cavity, yet in no instance has the author been able to discover afterwards any trace of matter discharged by stool, so small has been the collection of this fluid; in some of the patients a few drops of blood have passed afterwards through the urethra. In one or two some urine has passed for a time by the rectum; the quantity, however, was in general very inconsiderable. This occasional watery stool was at once the only proof and inconvenience attending on such cases. The escape of urine gradually ceases in the course of a week or two never to return. In one case, however, the flow of urine into the rectum was much more troublesome, and to a greater amount; so that at one time the author was in dread lest the communication should become permanent, and a fistula be formed. Yet even in this case, an old, sickly, poor man, according to the last report there has been no discharge of urine per rectum for some time, it having gradually ceased since his leaving the hospital. In one instance only has hemorrhage followed this operation, and then it was easily commanded by laying on the orifice a small compress of lint, and retaining it for some minutes firmly pressed against it by the forefinger introduced into the rectum. The author has employed this operation in some few cases of obstinate gleet, where he had satisfied himself that there was not any stricture in the urethra, and where he felt the cavity in one lobe of the prostate, and pressure on this caused a flow of precisely the same kind of fluid as that which constituted the gleet. He considers the cases most favorable for this operation to be those in which the patient informs us that the discharge of the gleet takes place at intervals, and that he is made aware of the moment of its escape by some peculiar sensation which he then feels. As yet the author's success in this mode of treating obstinate gleet has been uncertain, having failed to effect any change in cases which he thought very favorable for the operation; while in those which appeared less favorable his success has been complete. The author has employed this operation in cases of enlarged prostate gland, where nothing like a cavity was to be felt; but, as might be expected, without relief. Its highest praise, he considers, in this form of the disease, is that it has proved quite innocent.

In the first unsuccessful case, in which the patient was a very old gentleman, the ordinary treatment afforded no relief, even the catheter rather added to his sufferings, and if nothing further had been done death must soon have terminated his sufferings. Here the operation was followed by a gradual though rapid improvement in the symptoms, and this improvement was permanent; he had no return of urinary irritation, though he lived seventeen years after. In the second case the

symptoms were still more severe; the patient was still more exhausted by long suffering, and here the relief afforded by the operation was great and sudden, and continued for several years; and on the return of the former bad symptoms, a repetition of the operation was followed by the same happy result, as quickly and as perfectly as before.

In the third case, already alluded to, there was reason to apprehend that a fistulous communication had been established between the bladder and prostate; but eventually this perfectly closed; the man's health was much improved, and he was much benefited by the operation. It is suggested that it might be a question whether this operation would not be justifiable in a case of fistula in perineo, arising, as the author believes it sometimes does, from this disease of the prostate, and which had resisted the ordinary methods of cure.

ART. 66.—*Ligature of both Carotid Arteries for a remarkable Erectile Tumour of the Mouth, Face, and Neck.* By Dr. J. MASON WARREN, Surgeon to the Massachusetts General Hospital.

(*From the Author. Condensed.*)

Albert Tabur, from Maine, 23 years old, consulted me on October 1st, 1845, for an enormous tumour of the lower lip and tongue, which had supervened a mark occupying a good part of the face and neck, and now presented the following appearances. The head of the patient was larger than common; the left side of the face was almost wholly occupied by a discoloration, which was originally less extensive and lighter coloured, but had now attained the extent and appearance above-mentioned. The right side presented a discoloration about half the extent of the left. The lower lip was much enlarged, everted, and presented three aspects: externally, the thick tumefied lip, internally, a fungoid tumour, covered by red granulations distended by blood, as if ready to break through; the whole surmounted by an irregular ulceration, with thickened edges and a hardened base. The red granular appearance extended underneath the tongue through the ranular space to the inferior surface itself, the left half of which was enlarged to double its natural size, and partially protruded between the teeth, its upper part being the seat of five or six small ulcerations. The discoloration of the face also extended on the outside of the lip downwards over the chin and neck, covering a space of seven or eight inches in diameter, the whole, especially that on the face, being rather more full and distended with blood than natural.

The history of the case was this. The mark, as above stated, was congenital. About four years since the lip and tongue began gradually to swell, and the former very shortly ulcerated. The ulceration has occasionally healed since that time until the last year, when it has been permanently enlarging. On making pressure on the lip the blood can be gradually expelled, returning again immediately on the pressure being withdrawn. The same is the case with the tongue. Since the erectile tissue has been developed in the lip the discoloration of the face has become more marked, has extended, and is evidently partaking of the character of the erectile tumour in its neighbourhood.

The two most prominent dangers which appeared to threaten were,

first, a cancerous degeneration of the ulcerated lip; and, secondly, alarming hemorrhage, which must, in all probability, prove rapidly fatal.

I proposed, in consultation with Dr. John C. Warren—1st, to have the left carotid artery tied; 2d, after a considerable interval of time to tie the right carotid; 3d, to attack whatever portion of the tumour remained by means calculated to produce contraction of the vessels and obliteration of the erectile tissue. To this course the patient agreed, and on October 5th I tied the left carotid artery. He recovered from the operation, and was out in about ten days. The face had become more pale, the erectile tissue and the large tumour of the lip had very much diminished in size, and the painful ulceration which surmounted it was rapidly healing. The patient seemed to be in perfect health. He was advised to go home, remain three or four weeks, and then return to have the other carotid tied; in the meanwhile to apply a strong solution of the sulphate of zinc, by compresses, to the inside of the lower lip.

Nov. 7th.—When the patient returned from the country it appeared that the tumour of the lip was diminished one half. The fullness of the face and neck was less; the discoloured parts were much paler. The size of the tongue was less, and the ulcerated spots quite healed. His health remained good. The day previous to the operation I made a compression on the artery for about five minutes, without any obvious inconvenience to the patient, and with much encouragement to myself as to the event of the next operation. The patient being placed in a sitting posture, the carotid artery was laid bare, and a ligature passed under it. It was dilated about one third more than its natural size. He was placed on his bed, with the head slightly elevated; the pulse was 80. The ligature was drawn tight. At first he exhibited no change, but shortly after, the pulse appeared to labour and become slightly irregular; the patient became drowsy. After waiting about fifteen minutes, the second knot was tied, and the wound dressed. No inconvenience was experienced from this operation further than a slight faintness during the afternoon on attempting to raise his head. He was directed to keep perfectly quiet, and to maintain strictly the horizontal position.

On the third day there was a slight soreness about the larynx, which lasted three days. He is now, Nov. 19th, at the end of ten days, in good health, and able to go down stairs. The face is much paler than before the last operation, and the morbid appearances are diminishing.

Nov. 26th.—The ulceration of the lip is quite healed, but the lip itself is still thick and somewhat everted by the erectile tissue, which enters into its whole substance.

On examination of the part, it was concluded that although the swelling was gradually diminishing, yet it would not wholly disappear without a further operation; and that, as the patient lived at a considerable distance, the disease, if disposed to return, might get beyond control before the proper remedies could be applied to check its increase. I therefore determined to remove the diseased portion of the lower lip by a V-like incision. Previously to this, and in order to avoid hemorrhage, I performed the following operations.

A cataract needle was plunged into the vascular texture on the left side, and carried in different directions, so as to break up and destroy its

organization. No hemorrhage followed this application. Three days afterwards a similar operation was repeated on the right side.

Nov. 29th.—A final operation was performed. A strong compression being exercised by means of two steel forceps prepared for the purpose, on each side of the lip, so as completely to interrupt the course of blood into it, a portion not less than two inches in length at its free edge was removed by a triangular incision. At first there was not the slightest hemorrhage, the two lips of the wound remaining perfectly dry; on the compression being removed, however, blood gradually oozed from the whole cut surface. This was easily checked, and the edges of the wound approximated by a number of points of the interrupted suture, and a powerful compressing bandage applied.

For the first twenty-four hours he was carefully watched. Towards evening a coagulum was found projecting from the wound, which was removed. From this time there was no farther hemorrhage or bad symptom, and the wound healed by the first intention.

The portion of lip removed presented a spongy tissue, like the body of a leech, and gave a sensation in cutting like a bit of diseased lung; parts of it were indurated, from the previous subcutaneous incisions. The muscular tissue had almost completely disappeared.

Dec. 12th.—*The patient returned home quite well;* the discoloration of the face had become much paler, and that of the neck and chest had almost wholly disappeared. The ear had lost its swollen and deep reddish colour, and had become of a natural size and of a pale aspect. No pulsation could be discovered in either of the temporal arteries, or, in fact, in any of the arteries of the head. In the neck, just above the clavicle, two large arteries, nearly the size of the carotids, were seen pulsating powerfully under the skin, being, in all probability, the supra-scapular arteries greatly enlarged. I have had a letter from this patient since his return home, and he is now, Feb. 1st, nearly four months after the first operation, in the enjoyment of perfect health, nor has he had the slightest indications of disturbance in the brain from this great interruption to its natural circulation.

ART. 67.—*Popliteal Aneurism cured by one application of Galvano-puncture.* By Dr. CINISELLI, of Cremona.

(*Gazetta Medica di Milano*, and the *Revue Méd.*, Mars, 1846, p. 435.)

C. A., of a robust constitution, having never had any serious illness, was attacked in October, 1845, at the age of 70 years, with a popliteal aneurism in the right ham. In December he could do no more than walk a few steps in his chamber. In January, 1846, he entered the hospital at Cremona. The tumour was of the size of a large goose's egg. There were circumstances unfavorable to the ligature, and the surgeon wished to try compression, but the intractability of the patient would not allow this method to be continued; the cure by galvanism was accordingly resorted to.

The crural artery having been compressed, four very fine steel needles, 56 millimetres long, were introduced into the tumour; two crossing each other towards the centre without touching. A pile of 22 pairs, 93 milli-

metres square, furnished too feeble a current, so that after a few minutes it was increased to 30 pairs. The electric action was continued for 25 minutes. Each needle was connected alternately with each pole; a sensation of smarting in the tumour, of contraction in the muscles of the calf of the leg, and a powerful shock in the sole of the foot, accompanied the change of the poles. The patient was agitated, he disturbed the compresses several times, and occasioned the pulsation of the tumour to return; his impatience would not allow the electricity or the compression to be continued. The tumour was accordingly enveloped in a bladder of ice, and left for six hours. The pulsations at this time returned, and the surgeon feared that his experiment had failed, yet 24 hours after the galvano-puncture they had ceased. The tumour diminished in volume by degrees, and the articulation of the knee became more free, the leg admitting of complete extension. Seven days after the operation the patient left the hospital, walking very well.

ART. 68.—*The Treatment of Paralysis, Lumbago, Sciatica, &c., by 'Firing.'* General Remarks. By Dr. CORRIGAN.

(*Condensed from the Dublin Hospital Gazette*, March, 1846.)

The iron used is very portable, consisting of a thick iron-wire shank, about two inches long, inserted in a small wooden handle, having on its extremity, which is slightly curved, a disc or button of iron, a quarter of an inch thick, and half an inch in diameter; the whole instrument being only six inches in length. The face of the disc for application is quite flat. This, trifling as it may seem, must be attended to. In the French cauterizing irons, as they are sold by the cutlers, the buttons for cauterizing are spherical, and the consequence is, that they must either be pressed long and deeply into the skin, to bring them in contact with an extent of surface equal to their diameter, or they can be made only to touch at a single point. Another objection to the French iron is, the great length of its iron handle. This is necessary in the French instrument, as the iron is intended for being heated in the fire; but it terrifies the patient, whereas the little instrument here described will hardly attract attention. The only other portion of apparatus required is a small brass spirit-lamp, so small that it can be carried in the waistcoat-pocket. To use the instrument, it is necessary to light the lamp, and hold the button over the flame, keeping the forefinger of the hand holding the instrument at the distance of about half an inch from the button. As soon as the finger feels uncomfortably hot, the instrument is ready for use, and the time required for heating it to this degree is only about a quarter of a minute. It is applied as quickly as possible, the skin being tipped successively at intervals of half an inch over the affected part as lightly and as rapidly as possible, always taking care to bring the flat surface of the disc fairly in contact with the skin. In this way the process of firing a whole limb, or the loins, making about 100 applications, does not occupy a minute, and the one heating by the lamp suffices. You can ascertain at once whether the heat be sufficient. If you look sidewise at the spots as you touch them, you will observe that each spot the iron has touched immediately becomes of a glistening white, much whiter than the surrounding skin. In the

course of a quarter of an hour, or sometimes of a very few minutes, the whole skin becomes of a bright red, and the patient feels a glow of heat over the part. The iron is never rendered red hot; it is very little hotter than boiling water, and I never make an eschar with it, and very rarely raise a blister. There are seen upon the skin next day a number of circular red marks, the cuticle not even being raised, and the surface being ready, if required, to receive a fresh application; and what is of no trifling consequence, where such an extent of counter-irritation has been used, there being no discharging surface to interfere with the motion of the limb, or the comforts of the patient. In most cases the patient is quite unconscious of what has been done. This is a considerable improvement on the actual cautery, whether as regards the horror of the patient on seeing a red-hot iron drawn out of the fire, or the deep ulcer produced by its application. The thickness of the dise or button of the instrument is not a matter of indifference. If it be thinner than the measure I have given, it will cool too rapidly; if it be thicker, it will take too long a time in heating. Of the little pain produced by its application you can form an estimate, when I tell you that some of our resident clinical clerks here have preferred it in their own cases, when suffering under local muscular rheumatism, to any other method of counter-irritation, as being the least troublesome, the most rapid, the least painful, and the most effectual. I can certainly recommend its application in the way here directed as one of the most useful of our counter-irritants; it can be applied so rapidly, so extensively, and, as I have already said, without even the patient knowing very often what has been done. Its superiority over blisters may also be owing to the suddenness of impression produced. The effect is often as instantaneous as the application. My friend, Dr. Mitchell, master of the Victoria Lying-in Hospital, consulted me some months since for a severe attack of lumbago. I applied the firing, and he was in one minute quite free from pain. He has since used it himself extensively in practice, and, I believe, he will shortly publish the results of his observations.

A gentleman, in leaping from a railway carriage, strained the muscles of his loins. He used liniments for two or three days, and took a warm bath. He continued to suffer so much that he at length called on me. He could not sit down on a chair without much inconvenience, but to rise was a labour of great torture. While conversing with him, and drawing off his attention, I heated the irons, and fired him over the loins, he was instantly well.

In another case, a gentleman, from riding a hard-pulling horse, began a year since to feel numbness in the little and ring finger of the left hand. This gradually crept up along the ulna, to the elbow, and at length there was such loss of muscular power, and so much numbness whenever the bridle pressed upon the fingers of the left hand, that he became nervous about riding. I fired him along the forearm, inside and outside, from the elbow to the hand. He has felt no inconvenience since, and a period of a month has elapsed. In sciatica I consider this mode of firing a most valuable aid in our treatment. It may, however, require several applications before permanent relief is obtained. I have also used it with the greatest advantage in cases of neuralgia of the fifth pair of nerves, and in paralysis of the portio dura of the seventh. Even delicate females will not object to its frequent repetition when required.

ART. 69.—*Successful Operation for the Cure of Imperforate Anus.* By W. G. SMYTH, M.D., London.

(*The Dublin Med. Press*, May 20, *from the Lancet.*)

A male infant had been in the world for two days before the parties attending it discovered the malformation. The child had refused the breast, had been vomiting and hiccuping: the abdomen was swollen and hard. It was obvious that the rectum lay deep, there being no indication, either by colour or touch, of its situation, or of any external preparation for an anus. Mr. S. proceeded to search for the rectum, the child being placed on the midwife's knee, on its belly. Making an incision in the middle of the perineum, the sphincter was observed to be straight, its inner sides being in close contact. This was cut through, and part of the levator ani and the fatty matter beneath were divided to the depth of an inch; but Mr. S. could find no indication of where the rectum lay. He enlarged the external wound in both directions, and then continued to cut cautiously upwards and backwards; and having arrived at the depth of about three inches, being able to touch the pubes in front and the sacrum behind, the wound being large enough to bury the index-finger, on examining with great care we could not discover any appearance of a rectum. However, when the child cried, a slight impetus was felt, a descending from behind, towards which, through the intervening substance, he pushed a trocar, as slender as an exploring-needle; and, on the second application, the escape of gas through the canula satisfied us that the bowel had been reached.

Mr. S. now made an attempt to enlarge the opening with a director and bistoury, but found there was no room to act with certainty. A full-sized trocar was easily introduced, and by pressing on the bowel, a considerable quantity of meconium was expelled; a bougie was then left in the wound. On the next day a probe was passed, along which the canula was easily guided into the bowel, which it reached when pressed into the external wound; but it was only by squeezing the bowels that the contents could be made to flow outwardly.

It was quite evident how difficult, if not impossible, it would be to make an efficient opening for the fæces to pass through this long and rather curved channel, and how difficult it would be to prevent such an opening from closing, and also how unlikely the power of either voluntarily expelling or retaining the fæces would be obtained. Mr. S. therefore considered it expedient to bring the bowel down into the wound: for this purpose he passed a small pair of case-forceps along the canula, and laying hold as near the opening into the bowel as he could reach, he gently and gradually pulled it down upon the canula. This being repeated two or three times, the opening into the bowel was brought down to near the mouth of the external wound. No means were used to retain it, and the injection of warm water now thrown up was returned with power. The canula remained in the bowel for ten days, the fæces being freely expelled through it by the muscles of the rectum. The greater portion of the wound healed by the first intention around the canula by granulations. The sphincter now acts well, and a good anus is formed—if anything, a little too far back; the bowels act naturally, a bougie being occasionally passed. A month has elapsed, and no bad symptom has occurred.

Art. 70.—*New Operation for the Cure of Hemorrhoids.*

By M. Amussat, M.D., of Paris.

(*Condensed from the American Journal of the Med. Sciences*, April 1846, p. 346)

For a long time I employed exclusively the ligature. In 1842, the discovery of the solidified caustic of Vienna suggested to me the idea of recurring to cauterization, in order to avoid the accidents which sometimes take place in consequence of the constriction produced by the ligature. In April, 1844, my son, M. Alphonse Amussat, thought that cauterization of the hemorrhoid, *en masse*, might be advantageously replaced by the circular cauterization of its pedicle. To attain this end he had various porte-caustic forceps constructed. Those which I prefer are nothing more than dressing forceps, whose extremities form two little cylinders of about four centimetres in length, and two or three millimetres in diameter, upon each of which has been cut, parallel to its axis, a deep groove, intended to receive the caustic of Dr. Filho, or a paste made of the same caustic pulverized, and a little alcohol. The following is an account of a case operated upon by this method, and contains the details of the operation.

M. D., ætat. 60, of a good constitution, had enjoyed excellent health until 1840. At this epoch he felt, for the first time, some uneasiness about the rectum, accompanied by a slight loss of blood. From that time the same phenomena appeared rather frequently, especially after the fatiguing labour which his position required him to undergo. The patient thought that he had a prolapsus of the rectum, and he applied a bandage with a pad, which embarrassed him very much when he walked. Finally, during the present year (1845), the pain and inconvenience which his disease caused him having become more frequent, he determined to consult a surgeon.

Dr. Ponget, who usually attended the family, applied to me on the 14th of July, and I proposed to rid the patient of two hemorrhoidal tumours; these, and not a prolapsus of the rectum, as the patient had imagined, being the sole cause of the pain. The 16th was fixed upon for the operation, as he was to prepare himself for it by taking a mild cathartic, and subjecting himself to a strict diet.

July 16th.—M. D., after returning an enema which he had just taken, made strong expulsatory efforts, as if to go to stool; two internal hemorrhoidal tumours could then be seen, of the size and form of a large bean, situated upon the lateral portion of the rectum, at a short distance from the anal orifice; likewise two external ridges, corresponding to the internal hemorrhoids. The patient having placed himself on the right side, I seized the left hemorrhoid, the larger of the two, with my porte-caustic forceps, and held it in this manner during a minute and a half. I then opened it with scissors in the direction of its length, to empty it of the little blood which it contained, and still holding it with the forceps, cauterized its interior with a cylinder of Filho's caustic. At the expiration of half a minute more the operation was finished. Injections were made, in order to remove the particles of caustic which adhered to the surrounding parts, and the patient got immediately into a hip-bath, which had been prepared beforehand.

The patient remained several hours in the bath without experiencing any sharp pain, and without having the least fevcrish excitement; he passcd a good night, and the next day felt but little pain. The cauterized hemorrhoid was flat, blackish, like a true eschar, and the laminæ resulting from the incision were perfectly distinct. Strict diet and a slightly astringent drink were prescribed, in order to avoid stools, which might have caused the hemorrhoid to fill before the time necessary for its climination should have elapsed. The following days the patient was subjected to the same regimen, viz. frequent hip-baths, injections, and cataplasms, with no other nourishment than a little broth. The seventh day the hemorrhoid came away in pieces, after a moderate stool, and without causing the patient any suffering. The eighth day M. D. felt very well. In place of the destroyed hemorrhoid was seen a little linear cicatrix, about three millimetres in length, surrounded by a small reddish areola, with a slight suppuration. The other hemorrhoid seemed to have diminished in size, and its surface was slightly inflamed.

During the seven days preceding the fall of the cauterized hemorrhoid M. D. had several stools, small in quantity, and almost liquid, provoked by injections; but the process of elimination was in no wise altered by them. In the course of the treatment, the patient having several times complained of a painful point near the left external projection, I made, with a lancet, a slight incision, which gave issue to a red granular matter, the escape of which afforded the patient relief. Some days afterwards I destroyed the second hemorrhoid by the samc method, with thc omission, however, of the longitudinal incision, which omission rendered the process of elimination a little more painful. About the middle of the month of August the patient was entirely cured.

Art. 71.—*On certain Infirmities of the Right Hand which prevent writing, and of their Cure—(The Writer's Cramp.)*

By J. J. Cazenave, of Bordeaux.

(*Condensed from La Nouvelle Encyclographie*, Mars 1846, p. 257.)

This memoir gives an account of a very singular affection, under different forms, but always preventing those who are afflicted with it from writing. In seven cases collected by M. Cazcnave, four times the infirmity affected the right thumb only; and three times there was a trembling of several fingers.

In the first case, the right thumb could not hold the pen; in other respects its motions were perfcct. It could assist in holding bodies and pressing them, and it also executed perfectly certain movements rcquiring at the same time both force and grcat precision. In the second case, the right hand had lost the power of writing, though at the same time it was capable of every other movement. There was also a spasm of the small muscles of the thumb, felt only at the moment when the patient bcgan to write. The third casc was rather diffcrent; the patient, a book-keeper, had his mind so preoccupicd with the fear of writing badly, that he always practised bcfore taking to his books. But from the momcnt hc took hold of his pcn, the thumb wcnt spontaneously backwards, then outwards, and let go its hold; when, however, his attention was fixed upon something

else, the thumb became pliant, and the writing easy, neat, and running. In this case, also, the thumb and hand had all the other movements quite perfect. The fourth case presented also some special circumstances. When the patient sat at his desk, the thumb executed perfectly the motions necessary for writing, but, on the least mental disturbance, or whilst under particular impressions, the thumb could no longer hold the pen, which dropped involuntarily from the fingers. This took place five or six times in the same day.

What is the nature of this affection? M. Cazenave declares he does not know. Perhaps if the observer had studied it more, the data furnished by the various modes of treatment adopted would have been of some use, for, imperfect as they are, they have a certain degree of value. In the first case, rational indications were first tried, then empirical means, but without success. The fourth patient was treated with alkaline and sulphureous douches, frictions with strychnine, and tincture of cantharides, leeches to the anus, repose during a month in the country, all of which failed. In the second case, acupuncture of the muscles of the thumb enabled it to hold the pen, and to trace several words. The surgeon passed a seton, composed of two skeins of silk, from the back of the hand through the abductor muscle of the indicator, and the small muscles of the thumb, and this was kept open during five weeks, being moistened every morning with a solution of opium and extract of belladonna. As long as the seton was continued there was no action of the muscles, and the thumb continued in a state of complete abduction. On removing the seton, the thumb regained all its motions, including those required in writing; but, unhappily, the cure lasted only four months, and the inability to write returned. In the third case, M. Cazenave tried a great many ingenious contrivances. Firstly, methodical and moderate compression of the forearm, the movements of the thumb were rendered easier during three weeks; and this was all. Secondly, dry frictions, and the application of leeches in the course of the radial nerve, where the patient complained of pain; then twelve or fourteen electric shocks; then the patient was advised to work at joinery. All this produced a marked amendment, which, however, did not last long. Ultimately, M. Cazenave employed moderate compression of the arm, at the site of the insertion of the deltoid, by means of a laced arm compress, wide enough to contain the third part of the limb. This compression was continued three years, during which the thumb has recovered completely, and the patient writes as well as ever.

In the other three cases, the disease was a little more extended. M. Heyfilder described, in 1833, under the name of *cramp of the fingers,* an affection that he had observed at a library at Berlin. It was a convulsive trembling of the three first fingers of the right hand, causing the pen to ramble upon the paper, and also an involuntary separation of the same fingers, which obliged the individuals to let go of the pen. Independent of this affection, the hand possessed all its capabilities.

Another patient of M. Cazenave had a trembling of the whole hand when he attempted to write; the thumb could not hold the pen; the trembling always disappeared when the attention was directed to something else; and in all other respects the hand was perfect.

In the third case, the two hands were agitated with a continual trembling, especially the thumb and the index-finger of the right hand. This

trembling was increased by emotion, and under mental impressions. M. Cazenave, in speaking of the case, attributes the affection *sometimes to one of the forms of myelitis, sometimes to great nervous irritability, and at others to the weakness resulting from old age.*

For ourselves, separating the last case, where the trembling was continual, we can only see in the six others a variety of the same affection, which would be well designated by the name of "the writer's cramp." The absence of all symptoms when the hand performs other exercises, and their constant return on writing, appears to us sufficiently definite to establish a distinct disease. But the most important question refers to the treatment. Compression of the arm was the only plan which succeeded, but upon the sixth and seventh patients it failed. M. Cazenave invented a small apparatus to contain the pen and the three fingers, screwed together, in such a manner that the motions of flexion were no longer possible, and the patient was obliged to write with the hand, entirely by the motions of the wrist-joint. A few lessons were sufficient to habituate the patient to this manœuvre. The apparatus consisted in a penholder, armed with two compressing screws, and two circles of Indian rubber, each provided with a return screw. These circles of Indian rubber might be replaced by flat bandages, supple, elastic, and cut broad, which would be easily tied; the penholder is the only indispensable part; and we have ourselves found that an ordinary penholder, fixed upon the fingers with a riband, perfectly fulfils the indication.

M. Cazenave applied his apparatus in the last two cases, with the best results. One patient, after using it three months, thought he could do without it, but the infirmity soon returned. Lastly, for the writer's cramp we are not yet acquainted with the proper mode of treatment, but M. Cazenave's apparatus appears to be at least an excellent palliative.

Art. 72.—*Improvements in the Operation of Cupping.*

By R. Cranfield, M.B., Enniscorthy.

(*The Dublin Medical Press*, Dec. 3, 1845.)

It needs scarcely be observed, that when local abstraction of blood is indicated, cupping is much more effectual than the application of leeches. This is owing, not only to an impression being made by blood being drawn in larger quantity and with greater quickness than by leeches, but also to the great derivation to superficial parts by the suction of the glasses. This latter cause is of such power as to be attended with very perceptible effects, even when the scarificators are not used. Notwithstanding these advantages of cupping, it is frequently rejected for less efficient means, which is, I conceive, owing to the following causes:—1st. Apprehension of pain on the part of the patient. This is quite unfounded, as those who have experienced both cupping and leeching nearly all concur in preferring the former. 2d. Apprehension of trouble, and consumption of time, on the part of the practitioner. This, I am satisfied, would vanish under the use of good instruments. I have frequently known an hour, or even an hour and a half, to be consumed in cupping a patient; but, with good instruments, I should consider it a tedious operation which would not be completed within half an hour, and it may often be

performed in ten minutes. When properly done, the patient is not fatigued, nor his clothes soiled or rendered damp. To effect these objects, the glasses in use at present are not adequate: they are too small in capacity, too sharp in the lip, and too large in the orifice, compared with their capacity, which causes too much of the soft parts to be forced into the glass, and thereby strangulated at the orifice, which of course impedes or absolutely stops the flow of blood. When a cupping-glass is applied, the soft parts are forced into it, so as to assume the shape of a hemisphere, the base of which is the orifice of the glass. The lip of the glass should correspond to the surface of such a hemisphere, in order that the least possible constriction may be made upon the skin, and the capacity of it should be as great as conveniently can be, in order that the entrance of two or three ounces of blood may not materially diminish its state of exhaustion. This is the principle on which the glasses I recommend are constructed.

Systematic writers on cupping speak of performing the operation on the anterior part of the neck, and under the inferior maxilla, but I consider the application of leeches preferable in these situations, even in hospital practice. In general the benefit of leeching is doubled by the application of cupping-glasses over the bites, unless the part be too tender to bear them.

The following is the best mode of applying these cupping-glasses. The interior of the fundus having been moistened with spirit of wine, by means of a very small piece of sponge tied upon wire, the glass is to be placed upon the part to be cupped. Then, raising the glass, except at one point, the bit of sponge, having been applied to the flame of a candle, is to be quickly passed under the glass, so as to ignite the spirit of wine on its inner surface, and as quickly withdrawn, which being done, the glass is to be reapplied with a little pressure. The length of time the glass is to be left on, depends upon the freedom with which the blood flows. An average time is five minutes; and, as a general rule, it should not be left on until the blood coagulates upon the skin (unless it be the last glass that is to be applied), nor until it be more than one third full. When a glass is removed, the blood should be wiped off the wounds with a hot sponge, and then another glass, previously moistened with spirit of wine, should be instantly applied. A glass should be applied once or twice before using the scarificators. In cases where it is necessary to use small glasses at first, from larger not fitting, it generally occurs that larger glasses may be afterwards applied; and such change is always advantageous, because it alters the seat of pressure. If there are hairs on the part, they must of course be shaven off. It is necessary that the patient should not be alarmed, and that he be kept very warm during the operation. If the circulation of the skin appear languid, hot stupes will favour the flow of blood.

To succeed in the operation of cupping, it is essential, in addition to strict observance of the foregoing, that the lancets should be sharp; and to have lancets always sharp, it is necessary to have two or three sets for the same scarificator, with a provision for changing them with facility. The scarificators in general use contain too many lancets. I got Mr. Millikin to make one with six lancets, and have found it to succeed better than one which I had previously used with twelve, which I suppose to

be owing to many vessels being cut across in two or more places by the latter. The scarificator with few lancets has a great advantage in this, that four sets of lancets may be kept in order for it with the same facility as two for the other. Persons possessing scarificators with more than eight lancets will find it well worth their getting some of them removed, and with those removed an additional set of lancets made. The older scarificators move each row of lancets in the same direction, which is a great disadvantage, and have no provisions for changing the lancets with ease. With a scarificator of proper construction, a small one for the temples is quite superfluous, as the removal of one row of lancets will adapt it for that purpose.

Most writers on cupping describe the application of two or three glasses at the same time, and of course of the scarificator in as many places, as the usual practice. This is a proceeding which is not required, and it is therefore wrong to make an unnecessary number of marks, especially in private practice. I have frequently taken a pint of blood by one application of the scarificator, the wounds still bleeding freely; and the instances in which I have found it necessary to apply it a second time are comparatively few. When the quantity of blood required is under four ounces, I generally remove one row of lancets, as a further means of reducing the number of marks. Oiling the lancets, before use, improves their action and prevents rust. The depth to which the lancets should be inserted varies from a tenth to two tenths of an inch.

Art. 73.—*Enormous Steatoma removed from the Side.*

By J. M. Foltz, M.D., Surgeon of the Fleet, Brazil station.

(*Condensed from the American Journ. of the Med. Sciences*, April 1846, p. 358.)

Don Jose Romein, aged 54, Capitos of the Isle de Lobos (Seal Island), at the mouth of the Rio de la Plata, while engaged, many years ago, in killing seal, received a severe blow on the left side, at an equal distance between the crest of the ileum and the lower edge of the ribs. After the inflammation and swelling occasioned by the blow disappeared, a small tumour occupied the seat of the injury, in the centre of the left iliac region; but as it was unaccompanied by pain or any other inconvenience, it received no further attention at the time.

Gradually increasing in size, but without pain, it continued to occupy the same place for about four years, at the end of which time it had attained the size of a large fist, and rested over the anterior superior spinous process of the ileum. The pressure of the patient's pantaloons now gave him some inconvenience, and at times the tumour was painful. Upon arranging his clothing in such a way as to obviate this pressure, the pain subsided, and the size of the tumour was not such as to interfere with his daily avocations.

The tumour continued to increase at a uniform rate until the present time, now 18 years, when it has reached a most enormous size, extending from the crest of the ileum, to which it is firmly bound, more than half way to the knee; while laterally it extends from the inguinal region of the thigh over the glutæi muscles, part of which it covers.

To enable himself to walk, the tumour is suspended in a broad band

with a pouch, which is secured round the waist; and with this assistance he has heretofore walked without much difficulty. A large *poncho*, the constant dress of the *Gaucho* of South America, conceals the enlargement; and but few of his friends, until recently, were aware of his deformity.

During the last two months, November and December, the summer of the southern hemisphere, the most prominent and dependent portion of the tumour has ulcerated, doubtless from imperfect nutrition; and at present copiously discharges an offensive pus. The pain at times is very severe, particularly at night, and the patient can only remain in his bed in one position. His general health is also becoming much impaired; probably in consequence of his being prevented from pursuing the active life in the open air to which he has been always accustomed; with the mental distress and anguish occasioned by the anticipation of long and severe suffering. He had great repugnance to an operation, as he was apprehensive of dying under the knife from hemorrhage, and he had made up his mind to perish with this disease. After careful examination, we felt ourselves able to give him the strongest assurances on this point, as we were satisfied that the femoral artery was not involved. With some persuasion he finally consented to submit. The principal difficulties anticipated were the firm adhesions to the fascia abdominalis dragged down by its weight, its dipping deep into the inguinal region, while its extensive base was almost immovable, owing to the firmness with which it was bound down by the fascia lata; and we were unable to form any opinion respecting its attachments on the lower surface.

On the 18th December I proceeded to perform the operation, assisted by Dr. Bond, in the presence of several gentlemen of the town. The patient was placed on his right side, on the edge of a bed, and an elliptical incision made on the outer and posterior aspect of the tumour, commencing at the crest of the ileum, and extending below the middle of the thigh. This incision was fifteen inches in length. The knife was carried as near to the ulcerated surface of the tumour as could be done with safety, to preserve the integuments. The skin was found to adhere closely to the sac, and it required much careful dissection to avoid piercing the integuments, or cutting into the substance of the tumour. After a careful and tedious dissection, this portion was entirely exposed; in doing so a blood-vessel was opened, which bled so freely that it could not be arrested either by torsion or compression, and it was found necessary to secure it by means of a ligature. A second incision was now made on the inner and anterior surface of the tumour, and the ends brought to meet the first incision, so as to inclose the ulcers and diseased portions of the integuments.

On the inner aspect the adhesions to the skin were not so strong, and this side of the tumour was speedily exposed.

We now proceeded to remove the tumour at its lower extremity, where it rested lightly upon the vastus externus; about the centre of its base, an artery, the size of the radial, was divided, and immediately secured by a ligature. In proceeding with the removal we found the attachments become stronger, consisting of the fascia lata and condensed cellular membrane, until we reached the fascia superficialis abdominis, drawn down from the abdomen where the tumour had been originally seated. In the separation of these condensed layers, care was taken not to permit

any portion of the tumour to remain behind, and in doing so, the arteria ad cutem abdominis was divided, but the bleeding from it was easily arrested. At this point we were prepared to meet with enlarged branches from the epigastric and external pudic vessels, but they did not present themselves. The head of the sartorius, the tensor fascia, a large portion of the vastus externus, and one half of the glutæus magnus were left perfectly bare, and were much depressed from the constant pressure of the tumour.

The edges of the wound were brought in contact, and secured with six sutures, cold-water dressings applied, and the patient left comfortable in bed enjoying a *cigaritto*.

The tumour was a fatty mass, measuring fifteen inches in its smallest, and twenty-two inches in its largest circumference, and weighed six pounds and ten ounces, Upon cutting into it, it proved to be a large steatoma, with tenacious pus burrowing and penetrating throughout its whole extent.

The patient continued to do well until the third day, when he complained of severe shooting pains in the left groin, accompanied with enlargement of the inguinal glands. This alarmed him very much, as he was apprehensive of tetanus. Warm fomentations were applied, and an aperient draught administered; after which he rapidly recovered, without any unfavorable symptoms.

ART. 74.—*On the Employment of Acetic Acid, Pure and Diluted, in the Treatment of Warts and analogous Productions.* By M. NEUCOURT of Verdun.

(*Journal de Chirurgie*, Mai 1846, p. 137. *Condensed.*)

The most common kind of warts have a horny appearance, and may be partly excised without pain or effusion of blood. They have a particular organization. On cutting them, we first raise the insensible horny part, on cutting them more deeply we see the blood project through vessels which come straight to the skin, and are separated from each other by the inorganic material of the wart. This disposition of the vessels is especially manifest after the action of acetic acid, which has the property of coagulating the blood in the vessels which nourish the wart, so that it becomes black in them; if we then cut the wart, it presents the appearance of a cane, exhibiting a multitude of black points separated by a soft grayish material, from which we may conclude that this species of wart, the most common, is constituted of a minute vascular system, which is proper to it, and that the vessels are disposed parallel to each other and perpendicularly to the skin; they secrete a peculiar inorganic material, which is the wart properly called, just the same as the vascular system, situated at the base of the nails, secrete the nail itself.

A second species of wart is that which, although hard like the preceding, which distinguishes it from nævus, is constantly red in all its parts; this redness is frequently deeper than that of the surrounding parts; it becomes pale by the pressure of the finger, and again injected when the pressure ceases.

The first species of wart may be easily destroyed by acetic acid, the second is not at all modified by it.

To obtain a cure, we commence by cutting the warts as low as possible

without making them bleed. A vinegar compress is then applied, and renewed as often as it becomes dry; if the patient will not submit to the confinement, they can only be employed at night, and then the treatment requires a longer time. In the morning the warts are found softened, presenting a gray layer, with very deep black spots; these black spots are nothing else but the external orifices of the proper vessels of the wart, vessels in which the blood is coagulated by the action of the acid, which at the same time softens the inorganic material of the wart, so that we may cut it deeply with facility without its bleeding. When we arrive near the living parts, it must be cauterized with pure acetic acid. This cauterization must not be resorted to if the wart has been cut too deeply so as to occasion bleeding, since in this case violent pain may be produced, otherwise there is little or no pain. We reapply the vinegar compresses, and keep them on the whole of the day. On the following day a fresh portion of the wart is mortified; we cut it, and continue the treatment.

At the end of eight days, more or less, the wart is considerably diminished, and sometimes totally disappears. When all has gone on well, we see by degrees the number of black points diminish; in place of the excrescence there is a cavity; we continue the treatment by excising all the mortified parts until not one black point remains, nor the least portion of the wart, for if we neglect the most minute part the wart will be reproduced. When the cure is perfect, not the least cicatrix remains, and the epidermis is reproduced. If the treatment has proceeded too rapidly, or if the skin of the individual is irritable after the continuance of the treatment for some days, great pain occurs, and an inflammatory areola is observed round the wart. Instead of black points, we observe a brown layer over the place occupied by the wart; by continuing the treatment, a slight suppuration occurs, the brown layer falls off, and a cicatrix is formed. In this case it is well to suspend the cauterization with acetic acid, to cut away as much as possible without producing bleeding, and not to apply the vinegar compresses for some hours, the cure then proceeds as before.

It is a curious circumstance that the acetic acid, which coagulates the blood in the proper vessels of the wart, does not act in the same manner on the normal network of vessels which surround it; on the contrary, it increases the activity of their circulation, sometimes producing slight inflammation, as above shown.

Art. 75.—*Submucous Section of the Sphincter Ani in the Treatment of several Surgical Diseases.* By M. Demarquay.

(*Condensed from the Archives Générales de Méd.* April 1846, p. 377.)

This operation is simple, and the result always satisfactory. For some years past, it has been practised with success by MM. Blandin, Guerin, Velpeau, and myself. It may be resorted to—1. To relieve a spasmodic constriction of the sphincter, either opposing the introduction of foreign substances into the rectum for the purposes of operation, or the passage of substances outwards, or producing the strangulation of parts. 2. To overcome the contraction of the constrictor muscle of the anus. The only distinction between the spasmodic constriction and

contraction being, that the one is temporary, and in the other, the muscular fibre is so modified that the constriction has become permanent.

Signs of spasmodic stricture and of contraction.—The anus is more sunk than usual, the folds are also more marked; if hemorrhoids exist, or the mucous membrane is prolapsed, these parts, constricted by the sphincter, have a violet tint, and may even become gangrenous; the introduction of the fingers into the anus is difficult, and when effected, the constriction is felt distinctly; this exploration is painful to the patient; he experiences an involuntary contraction in this region, accompanied with pains, so much the more severe as the exciting cause is more painful in itself.

Myotomy for spasmodic constriction.—Spasm may occur, and the operation may be required under various circumstances. M. Parent, not being able to overcome the difficulty which the sphincter presented to the introduction of the hand, to relieve a retroverted uterus, for instance, incised the muscle; and it is evident that, if an operation should be resorted to in such a case, submucous incision would be preferable; but it is especially in the extraction of foreign bodies arrested in the rectum that a spasmodic constriction becomes important. Thus, Marchand was unable to extract an alvine concretion except by dividing the anus. The submucous section would be superior in this case to the division, as practised by Boyer; since it would have the advantages without the inconveniences or danger of the latter. This state of spasm may also occur in prolapse of the rectum, or in the sudden appearance of large hemorrhoids, as exemplified in the following cases.

Case I. *Prolapse of the rectum; constriction of the sphincter; sphacelus of the prolapsed part.*—"I was called," says Levret, "to a woman aged 60 years, with a prolapse of the rectum, about the size of the fist. The tumour was livid, exhaled a bad odour, exuded much blood, and was of long standing, but had always been easily returned. 'Yesterday,' remarked the patient, 'I was unable to return it, and I have suffered greatly since.' I wished to examine whether the tumour was formed by the substance of the rectum, or by the internal mucous membrane only; for this purpose I put a finger into the vagina, to ascertain the state of this part, and the situation of the uterus. I said, if the tumour is formed of the first coat of the rectum, there must necessarily be a displacement of the soft parts where this intestine adheres to the vagina; if, on the contrary, it is only the mucous membrane of the rectum which makes a hernia, I should not find the vagina and uterus displaced. I determined, in fact, that all the parts were in their natural situation." The tumour was ligatured, and the patient died.

When hemorrhoids occur suddenly they may be so strictured by the sphincter as to occasion gangrene, or the constriction being slighter, may oppose reduction; in both cases the operation is supported by reasoning and experience.

Case II. Madame X. was affected with hemorrhoids for several years; in 1842 they became very large, and formed a ring round the anus, being strongly contracted by the sphincter. Reduction was impossible, and when the tumours were pressed the most violent pain was produced. M. Blandin practised the submucous division of the contracted muscle,

the hemorrhoids returned of themselves, and no further inconvenience occurred.

Case III. A man had hemorrhoids for a few days, they were voluminous, surrounded the anus, were painful on pressure, and irreducible; the tension of the sphincter was easily demonstrable. M. Blandin divided the muscle, and in a few days the patient was cured.

Myotomy for contraction of the sphincter.—I shall consider the contraction in three divisions only, wherein it plays the part of cause or effect: 1, Constipation; 2, Old hemorrhoids; 3, Fissure of the anus. Contraction is frequently produced by long-continued constipation; the intestine being continually excited by the presence of hard and irritating fæcal matters, and by the effort at defecation; this contraction is by no means remarkable, and the effect has sometimes been mistaken for the cause. When hemorrhoids have existed a certain time, having frequently been congested and inflamed, a contraction of the sphincter not unfrequently occurs, and various consequences result. The hemorrhoids are with difficulty, and but imperfectly returned, they inflame, and render defecation difficult and painful; then follow fissures and hemorrhages.

Case IV. *Inflamed hemorrhoidal tumour; contraction of the sphincter; myotomy; cure.*—M. X., aged 35, had been affected with hemorrhoids many years. In the month of February last they became congested, and projected more than ever; ultimately they inflamed, and the patient, being unable to return them without pain, applied to M. Blandin, who resorted to myotomy, since which the tumours have shrunk, and have occasioned no further inconvenience.

Case V. *Voluminous hemorrhoids; frequent hemorrhages; myotomy; cure.*—A workman, aged 44 years, had suffered from hemorrhoids since the age of 26. For three years they have never entirely disappeared, and they bleed every time the patient defecates. For some months he has suffered greatly after every evacuation, but the pains do not continue long. There is a large hemorrhoidal ring around the anus. Some of the hemorrhoids are flaccid, and the others violet; the orifice of the anus is hid by the united tumours. The introduction of the finger into the rectum is not very painful, but the sphincter is strongly contracted. The operation was performed; after eight days the patient went out, the tumours were collapsed, the contraction had ceased, and defecation had become easy and without pain.

Case VI. *Hemorrhoids complicated with fissure and contraction of the sphincter; submucous myotomy; cure.*—A young man, aged 28, had long been affected with hemorrhoids, which ultimately became very severe, and after every defecation the pains in the anus and rectum were so acute that he was without strength or energy. A large hemorrhoidal ring existed around the anus, formed of lobes, some of which were pale, and others red or violet. On introducing the finger a considerable contraction of the sphincter was observed.

The pressure of the finger on the circumference of the anus did not much increase the pain, except at one part, situated to the left, and behind; in that situation, in a fold formed by the tumours, a small, elongated, reddish excoriation, about a centimeter long, and not very deep, was found on a level with the sphincter. By advice of M. Blandin, I em-

ployed the submucous section of the sphincter ani. At the moment of the operation I heard a crack, analogous to that which is heard on the section of a tendon. A very slight hemorrhage followed, the small wound healed by suppuration, and at the expiration of eight days the man resumed his habitual occupations.

I am led to believe that spasmodic constriction, or contraction, occurs before the fissure. In most cases, the fissure is preceded by constipation, which we have seen affects the sphincter.

Authors state that they have known the fissure of the anus occur without contraction; if they have not been deceived, we may perhaps find an explanation in the division adopted by M. Blandin, who admits that fissure may be seated above, on a level, or below the sphincter. It would be difficult to admit the existence of fissure alone in its first two classes, although it may be possible in the last.

I have analysed all the cases of fissure published since the time of Boyer. These, with the cases which have occurred to myself, amount to fifty-three, thirty in men, and twenty-three in women. The fissure was double, triple, or quadruple in six of the cases. In twenty-six of the cases constipation is noted, in six, hemorrhoids existed either alone or with constipation. In one case, the fissure succeeded a diarrhœa.

The pains which occur during defecation may be divided into two periods: 1. Those which are experienced at the instant of the passing of the fæces. 2. Those which succeed to it. The first are owing to the passage of matters which violently irritate the affected part, but the intolerable pains which occur an hour after defecation appear to me to depend upon the contraction; in fact, the irritated mucous membrane makes the sphincter contract. Hence, the folds of the anus are increased; the fissure at the bottom of the folds has its edges painfully compressed, and the suffering continues until the excitement has subsided.

Cases of anal fissure cured by the submucous section of the sphincter.

Case VII. A lady, aged 30, has been affected with an anal fissure two years, with contraction of the sphincter. The section was made, the cutaneous incision suppurated slightly, but the patient was perfectly cured in fifteen days.

Case VIII. A woman, aged 30, affected with anal fissure eighteen months, was completely cured by the operation in eight days.

Case IX. A man, affected with the complaint for many years, in whom all the usual remedies had failed, was promptly cured by the operation.

Case X. A young woman, aged 27, subject to constipation from 12 years of age, for three years past has suffered much after every stool, and has sometimes been five or six days without an evacuation. The introduction of the finger into the rectum was insupportable, the contraction of the sphincter considerable, and there were hemorrhoids. The operation was performed, and she left the hospital in eleven days, free from pain, having repeatedly emptied the rectum without any suffering.

Case XI. A woman, aged 38, has suffered much for six months on going to stool and in walking, and the sitting position is frequently intolerable. There is an elongated ulceration on the right side of the

anus ; its inferior extremity does not extend beyond the level of the sphincter ; its superior extremity is scarcely raised above the muscle, as far at least as the finger can determine ; its base is bright red, and it easily bleeds ; its edges are elevated, but there is no hemorrhoidal projection ; the finger introduced into the rectum is strongly constricted by the sphincter ; this produces the most violent pain, and a sense of burning and tearing, and it returns coated with blood and mucus. Nine days after the operation the patient went out cured. She was seen fifteen days after her discharge, and had experienced no further suffering.

Case xii. A man, aged 41 ; hemorrhoids for five years, with habitual constipation ; for three months, has suffered much on going to stool. The pains have acquired such an intensity that the patient dreads evacuating his bowels ; the pains are most severe an hour afterwards, and are compared to itching and burning, which radiates over the whole fundament. On the left side there is a small deep fissure on a level with the sphincter. Five days after the operation he went to stool without any pain. The persons present heard a snap at the moment of the section, the contraction of the sphincter being considerable. The patient left the hospital ten days subsequently, promising to return if he had any more pain, but has not been seen again.

Case xiii. *Constriction and fissure of the anus ; double submucous section of the sphincter ; cure.*—A student of medicine, aged 24, was several days obstinately constipated. On evacuating the bowels upon one occasion, he felt a tearing sensation, which was followed by a little blood. The sensation was like that occasioned by a foreign substance passing over an ulcerated surface, followed by pricking, which was soon confounded with itching, and a sense of heat and contraction of the whole fundament. Lotions of cold water were used, and the sensations subsided in half an hour. The following day, dreading hemorrhoids, he employed an ointment, and experienced no pain at or after defecation, but a kind of apprehension of dilating the sphincter. He was easy for several days, and ceased to use any means, when on going to stool, it appeared to him that something tore in the passage, and some time after, pruritus, burning pain, and an excessively painful contraction came on. Instead of diminishing, this last sensation increased, and in three or four hours there were lancinating pains and throbbing, as if an abscess was forming, and ultimately a series of sufferings occurred, which the patient could not describe. This led to general convulsions and fainting ; lotions, opiates, and belladonna but exasperated them, and after seven hours, a large poultice gave relief. On examination on the following morning a fissure was observed, and caustic was applied. For some days he had no pain, in the intervals he employed enemata before going to stool, had some slight shooting pains after meals, and before evacuating the rectum, and at the latter period he experienced a weight in the fundament, and a great difficulty in introducing the clyster-pipe, from a violent contraction of the sphincter. The fæces, although soft, met with great resistance to their passage, and although cylindrical they were flattened on their sides. After this, extract of rhatany was employed in form of a lavement. Seven or eight days subsequently the patient had no longer pain on evacuating the fæces, but he always experienced a little about an hour afterwards. He continued the rhatany about a month, and not

being cured, he consulted M. Blandin, who found a severe contraction of the sphincter, two fissures directed to the right, and one small one to the left, and he accordingly proposed the submucous section. The operation was performed. Fifteen days afterwards the patient still experienced a little pain, and M. Blandin found that he still had a contraction of one side of the sphincter. A subcutaneous section was made on the left side, and subsequently the patient felt nothing resembling the pains either of the fissure or of the contraction. He experienced some pain after the second operation, but not to be compared with that which occurred previously. He left Paris under these circumstances, and was ultimately completely cured by the two operations.

Description of the operation.—The rectum must be previously evacuated; the patient placed as for the operation of Boyer. An assistant raises the buttock of the side opposite to that in which the section is to be made; this is always done on one of the sides of the anus, in order to cut the sphincter in its middle; an ordinary tenotome, or a particular bistoury proposed by M. Blandin, may be employed. The first is inconvenient from not being long enough, nor sufficiently guarded, and it may cut or tear the mucous membrane, the perforation of which might be the cause of serious accidents.

M. Blandin's instrument is a bistoury, with a strong handle, and a moveable plate on one of the faces of the blade; the plate is rounded at its extremities, a little longer than the blade, and when closed it covers it completely. There are marks on the handle which indicate the direction of the edge. The operation is performed with this instrument alone. When it is required only to puncture the skin, a small part of the blade is uncovered; when the bistoury is to pass between the muscle and the mucous membrane, the blade is hid by the moveable plate, and the instrument acts as a smooth and slightly flattened stilet. When it is required to cut, the plate is drawn into the handle, and the instrument is used as an ordinary bistoury.

The operation is simple; it is necessary — 1. To make a small opening in the skin. 2. To introduce the finger into the rectum at the same time that the skin of both sides of the anus is made tense. 3. To pass the tenotome or bistoury between the mucous membrane and the sphincter. 4. To divide the latter.

The puncture of the skin is generally made two or three centimeters from the anus. The instrument should pass gently, in order to detach the parts as little as possible. This is the most delicate part of the operation, especially as the instrument passes the level of the sphincter. In one case, to avoid the difficulty, M. Velpeau cut from below upwards, but this practice is attended with inconveniences. At the moment when the division is made, a kind of snap may be heard, and immediately after the operation a space is distinctly felt between the divided parts of the muscle.

After the operation the cutaneous incision is dressed with cerate, or cold-water compress, and in a few days the cure is complete. The patient should be kept in bed, and defecation prevented for several days. Hemorrhage or inflammation occasionally supervene, but have never been found to prevent a favorable result. Occasionally, as in one of the instances quoted, the operation is required on both sides.

Art. 76.—*The Surgical Treatment of Croup.* By M. Guersent.

(*From a Clinical Lecture in the Gaz. des Hôpitaux. The Dublin Med. Press*, Aug. 1, 1846.)

The treatment of croup may be divided into its medical and its surgical treatment. The medical treatment is of very limited value, not acting directly on the disease; and if a few cases of its success can be adduced, they are of extremely rare occurrence. The insufficiency of the medical means is explained by their acting on the economy, whereas it is necessary to act on the seat of the disease. The medical means consist first of antiphlogistics, and they were naturally employed when croup was considered to be an inflammation merely; but those who have had some experience in the diseases of children know the antiphlogistic treatment is far from being effectual; nay, more, in many cases it is injurious. Applying leeches in croup is useless trifling, often even mischievous. Emetics, however, are often of the greatest value as adjuvants in croup. They act merely as mechanical agents, by favouring the separation and the expulsion of the false membranes which coat the air-passages. Mercury is often of great service, especially when we see the patient early in the disease; it evidently modifies the economy much more powerfully than antiphlogistics do, but it is essential to its success that respiration should not be too much embarrassed, nor the patient too debilitated. The cases, however, in which mercury has sufficed by itself to cure, as with the two former classes of remedies, are extremely few.

Surgical means are those on which we chiefly depend; and by surgical means we understand not merely tracheotomy, but also local applications to the fauces. Those local applications are liquid or solid. Various liquids may be employed in the treatment of croup; dilute muriatic acid, solution of alum, &c.; but that which should always be preferred is nitrate of silver, either in a very concentrated solution, or at various degrees of dilution. Among the solid applications, powdered alum and nitrate of silver in substance may be mentioned.

Dilute solutions generally possess little activity, yet they often suffice at the commencement of the disease, when pseudo-membranous spots form on the mucous membrane of the tonsils or pharynx. It is seldom that croup does not commence thus; sometimes, indeed, although rarely, it begins in the bronchial tubes or trachea, or attacks the larynx at once. Such an event is, however, of extremely rare occurrence, and if false membranes are frequently not seen on the fauces, the reason is that the parts have not been inspected till the first stage of the disease has passed. I was once called to see a child who had the preceding night been sleepless, restless, and slightly feverish; there was no cough, nothing to call attention to the pharynx. I inspected the throat, however, as I make it a rule always to do, and perceived some white patches on the tonsils, which I immediately cauterized; but, notwithstanding, croup of the severest kind set in, and tracheotomy had ultimately to be performed, but without success.

At the commencement of croup, then, false membranes almost always exist on the tonsils or on the pharynx, and are often overlooked, as the throat is not inspected until the larynx becomes affected; but the false membranes have then been detached from the fauces, and not a trace

of them is visible. It is when these false membranes exist on the fauces, that is to say, at the very commencement of the disease, that surgery is most efficacious; it is then that you may reasonably expect to cure croup, and will, in fact, succeed in doing so tolerably often, whereas at a later stage you will almost certainly fail.

In cauterizing the fauces with solid nitrate of silver which is commonly used, being always hard, care should be taken to have the child's head held firmly and most thoroughly steady; the caustic, too, should project but a very short distance beyond the port-caustic, for otherwise the slightest motion of the child might break it, and the fragment would fall into the pharynx. The proceeding is in itself a trifle, yet its consequences may be serious if those precautions are not observed. The caustic should not be applied to the false membranes only, the surrounding mucous membrane should also be touched with it, as thus the progress of the pseudo-membranous exhalation will most probably be arrested. The application of the caustic may succeed locally, and dispel the false membranes at the point to which it has been applied, but these may, nevertheless, extend and gain the epiglottis. Caustic is then still the best means at our command, but it must be applied in solution by means of a sponge proportionate in size to the width of the pharynx, and attached to a piece of whalebone bent at an obtuse angle. The position in which the surgeon stands while doing this is not a matter of indifference; if he stands in front of the patient, and the patient cough, the ejected matter may blind him for the moment, it is, therefore, advisable to stand at the side of the patient, and passing the sponge down on the base of the tongue suddenly semi-rotate it several times, the upper surface of the epiglottis is thus cleansed, and sometimes fragments of false membranes come away on the sponge; the epiglottis also may be raised, and a drop or two of the caustic liquid enter the larynx, which is known by the momentary suffocation of the patient and the succeeding cough. A few examples of cure have occurred after this operation, which should be repeated three or four times within twenty-four hours. Inhalations of muriatic and acetic acid have been recommended; in some rare cases they may be useful, but the efforts excited, whether by inhalations or emetics, have no chance of succeeding, except when the bronchia secrete mucus copiously, which detaches and favours the expulsion of the false membranes; all those therapeutic agents fail when the cough is constantly dry.

If the disease still gains ground we must recur to tracheotomy, which, unfortunately, too often fails. This operation has always been performed from time to time in this disease. Twenty years since M. Bretonneau performed it frequently in an epidemic of diphtherite, but it has chiefly gained ground since the researches of M. Trousseau, who has performed tracheotomy in one hundred and thirty-six cases of croup, thirty-two of which recovered. I myself have operated in thirty-six cases, and succeeded completely in four. MM. Gerdy, Velpeau, Bérard, Jobert, &c., have succeeded in some cases.

When the child is menaced with asphyxia, and the treatment fails to give relief, a fatal termination is imminent. We should not stop to consider the situation or extent of the false membranes; the child will die in five or six hours, or sooner, and tracheotomy, however doubtful the

result, is rigorously indicated. If the false membranes have only attained the larynx the case is favorable, but delay lessens the prospect of success; in croup, as in strangulated hernia, we should always, without precipitating the operation, have the probable necessity of performing it in our mind. Tracheotomy almost always fails, because it is performed too late. The non-existence of false membranes in the fauces does not contraindicate the operation. The child is threatened with asphyxia, makes violent respiratory efforts, and will die if not relieved.

When the operation is performed, if there are no false membranes in the larynx, nothing more need be done than keeping the wound open. But if false membranes present at the wound, or are expelled, they should at once be extracted with forceps. It has been recommended to pass down the trachea small pieces of sponge moistened with warm water, which, being suddenly withdrawn, may detach the false membranes, but I should think that by such a proceeding we might push the membranes into the bronchiæ, or impact them in the trachea. M. Guersent then recommended the use of the double canula after the operation, in preference to the ordinary single canula, and deprecated introducing solution of nitrate of silver into the trachea to favour the expulsion of the false membranes, as practised by MM. Bretonneau and Trousseau. After the operation the surgeon must remember that he is also a physician, and combat the inflammation of the lung if it exists, &c., by suitable treatment. In the last number of the 'Annales de la Société de Méd. d'Anvers,' M. Haine states that he has performed tracheotomy in croup in sixty cases, and eighteen times with success. He has become a convert to the opinion that the operation should be performed as soon as possible; as soon, in fact, as the larynx is affected, as the extension of the false membranes may be thus arrested. He objects to M. Bretonneau's double canula that it is too short and inflexible, and prefers a portion of large gum-elastic tubing.

ART. 77.—*On the Treatment of Varicose Veins.* By F. C. SKEY, Esq., F.R.S., Assistant Surgeon to St. Bartholomew's Hospital.

(*Medical Gazette*, and the *Dublin Med. Press*, Aug. 15, 1846.)

The treatment which my past experience fully justifies my recommending for adoption consists in the entire obliteration of the trunks and many of the branches of the saphena vein, both major and minor, by very small caustic issues, applied on the projecting veins, however large or numerous they may be; and in suggesting this, I believe I can pledge myself to two conditions: first, that the function of the vein on which the issue is made is from that hour suspended; and, second, that the operation of the issue so applied is unattended with danger of any kind. The operation appears to be complete and immediate. The current of blood is arrested; nor is the obstruction to the circulation thus caused apparent in any symptom of congestion resulting from it.

It may be inferred from this circumstance that the blood returned to the femoral vein through these cutaneous channels is, in reality, much smaller in quantity than the size of these vessels would lead us to infer. It will, however, be recollected, that in proportion to the enlarged size of

the veins, and their contorted form, is the quantity of coagulum contained within them, by which the circulation is necessarily obstructed, and they present the reality of venous aneurisms; i. e. of dilated veins, partially filled with coagulated blood. The proportion of coagulum doubtless varies a good deal, for we occasionally observe its almost entire absence, the veins retaining the softness on compression due to the fluidity of their contents. However large and projecting the vein, be its contents fluid or solid, on the part most projecting an issue may be made, so far as I have seen, without the remotest degree of danger, or any other evil consequences.

The material I employ for this purpose is the Vienna paste, a compound of quicklime and caustic potash, in the proportion of five of the former to four of the latter. These ingredients are mixed into a paste with spirits of wine; and in these proportions, which I cannot pronounce to be strictly those of the 'Pâte de Vienne,' a caustic may be applied, which will readily destroy the surface without causing the excessive pain attending the application of the pure potash alone, nitric acid, or similar agents. Under some circumstances it may be desirable to diminish the proportion of the caustic. The limb should be examined in the upright position of the body; the projecting veins marked with ink to the number requisite, including all the most salient points, in the trunk and branches.

While in the horizontal posture, the places thus marked should be insulated with a circle of plaster of three or four thicknesses, the diameter of which will vary with that of the swelling beneath; but it is very desirable on all accounts to make it as small as possible. I have found one quarter to one third of an inch to suffice in the plaster, and the issue itself will not exceed the size of a fourpenny-piece, or less.

The caustic may be removed at the expiration of half an hour, and the leg dressed and rolled lightly. In the course of a week or ten days the eschars come away, and the wounds are healed by ordinary means. But inasmuch as they are not altogether ordinary wounds, I wish to say one word on their management.

Two circumstances should be kept in view which militate against their early cicatrization, and sometimes so positively as to protract the recovery for many weeks, and form a serious objection to the treatment. First, the existence of a sore on the leg or foot at a remote distance from the centre of the circulation, which is, under all circumstances, tedious and protracted in its progress; and, secondly, the disease itself infers a languor of circulation unfavorable to early healing. In truth, the ulcers occasionally spin out their existence, especially when large, to a very inconvenient duration. I have seen examples, in which one or more of them have defied the curative means employed for three or four months; until, indeed, the patience of the subject of them has been almost exhausted.

It should be kept in mind that varicose veins owe their existence to inactivity of the action of the heart, or at least to some cause tantamount to it; and to this inactivity or want of force, and not to anything specific in the nature of the ulcers, is their duration to be referred. Hence the necessity of restricting the issues to the smallest possible size, compatible with the destruction of the vein; and of such any number may be made. The ordinary number I have employed has been six or seven. I have made twelve on one leg at one time.

The modes of obviating the above evil, and of establishing an active health to the circulation of the limb, are such as are ordinarily employed for this purpose, and by the judicious application of these the period of healing may be kept nearly within the limits that occur in other persons.

I often commence the treatment with a course of bark or other tonic agent before the operation, employed for two or three weeks, especially in persons of a feeble constitution. When the eschars come away, the ulcers should not be neglected, but carefully dressed with some form of stimulant. I commonly use the flue of dry lint, or black wash. The removal of the sloughs will be hastened by the application of a roller, applied around the limb from the period of a few days after the operation. I have occasionally made these issues with pure caustic potash, and also with potash once diluted, but the operation is rendered more painful, without any corresponding advantage; and without wishing to attach any marvellous virtues to that form which bears the title of Vienna paste, I think it preferable to any other form I have employed or seen employed.

The slough is complete, and the pain considerable, but not excessive. If too large a quantity of spirit be used, and the paste be too soft, it will of course diffuse its influence beyond the circle of the plaster.

I have had one or two cases in which considerable pain attended the treatment throughout every stage. The issues were painful in excess, the healing process was unusually painful, and, as occurred in the case of a gentleman now under my care, was protracted to three or four months. That this morbid sensibility is connected with the languid state of his circulation I am inclined to believe, because I have observed that in proportion to the rapidity of the cure, applying that term to the entire treatment, there is less of suffering, or, at least, more tolerance of pain. These, however, are by no means average cases, but exceptions, and they are neither so frequent nor so marked as to present any serious objection to its application.

A man applied to me in the out-patient room of St. Bartholomew's Hospital, with varicose veins of the leg, for the cure of which an immense slough had been made, as I imagine, by rubbing on or rubbing *in* the potash-stick lengthwise. This slough, which was indeed of noble dimensions, occupied that part of the leg bounded by the knee above the calf and the tibia below. It was somewhat larger than the palm of my hand!

This man, who was absent without leave from another hospital, thus gave me the agreeable intimation that my small experiment was being tried on a far grander scale elsewhere. The slough was deep in proportion to the broad expanse of surface. My attention was confined to the management of the large wound, exposed on the removal of the slough, which occupied several weeks, and indeed, in the first instance, to his health, which suffered greatly. On the healing process being completed, however, no trace of any veins remained. I have treated with small issues some thirty or forty cases, the large majority of which were persons in the lower ranks of life, and many of whom were out-patients of our hospital, but the treatment has not been confined to this class.

In some few examples the suffering has been remarkably slight, such persons having prosecuted their various occupations from the day of the operation. The average length of confinement required may range from two to three weeks, that of the entire treatment from four to five.

Where the two extremities are diseased, I have allowed an interval of one or two weeks to elapse between the dates of the application to each leg, beginning with the worse. In nearly all the above cases the relief has been of a very positive kind; in the large majority the cure has been complete; in two or three the disease, at the expiration of about two years, has returned in a mitigated form.

ART. 78.—*The Improvement introduced by the Patient, Robert Hoey, of applying a number of Clamps along the course of the Artery, in the Cure of Aneurism by Compression.* By Professor HARRISON.

(*Condensed from the Dublin Quarterly Journal*, Aug. 1846, p. 121.)

Robert Hoey, aged 29, a carpenter, of great intelligence, and of temperate and regular habits, was admitted into Jervis-street Hospital, with popliteal aneurism of about a month's standing, on the 9th of May, 1843. It being deemed a proper case, the press was applied. The pain experienced from this, when tightened so as to stop the pulsation, was so great that he was unable to bear it for more than an hour at a time. Several ineffectual attempts were made to keep up the pressure.

On the 12th, the tumour was somewhat harder and smaller than on admission, but no sensible effect had been produced on the pulsation. After this he took small doses of the tincture of digitalis morning and evening, and was kept on very low regimen.

On the 13th some œdema was visible on the front of the leg; the pressure continued as usual at intervals; on the 18th, a slight abrasion was perceived on the point of pressure in the groin; the instrument was removed and applied about four inches below the pubis. During the next four days he complained greatly of the loss of rest, which even an opiate failed to procure.

On the 23d the instrument was removed to its original position, but little progress was made in arresting the pulsation or diminishing the tumour; the pain was complained of as intolerable, he was unable to bear the instrument pressed home for more than one hour at a time, and was exceedingly restless, irritable, and feverish. The instrument was completely removed on the 27th, and that of Mr. L'Estrange applied on the 29th; and thus the treatment was continued during the entire month of June. Several instruments were tried, but none of them could be borne for a sufficient length of time to make any material or permanent change in the aneurism. On the 4th of July the patient was obliged to leave the hospital, owing to the death of a relative, but was allowed to take the instrument with him, with the intent and mode of application of which he was perfectly familiar.

On his return home, having reflected upon the cause of failure, which he naturally attributed to his having been unable to bear the pressure on the artery at the pubis, he invented, and immediately applied, a very simple instrument, on the principle of the carpenter's clamp, consisting of a small well-padded iron splint, four inches by three, connected with a steel bow, in the front of which worked a screw, furnished with a pad, with which he could compress the artery in any part of its course on the anterior or inner part of the thigh. He at once applied two of these, the upper com-

pressing the vessel about three inches below Poupart's ligament, the lower about the middle of the thigh, but each of them capable of being shifted occasionally, as the point of pressure became tender. With these he completely commanded the circulation for upwards of twenty-four hours. As soon as the upper caused much pain, after an hour or so, he tightened the lower one and relaxed that above, and so alternated from one to another, always making sure that the circulation was fully commanded, by one instrument being screwed down before he loosened the other. He had thus the satisfaction of completely effecting his own cure; but, fearful of any return, he wore the clamps even outside his trousers for a considerable time afterwards.

[The man was examined on the 1st of July, 1846, when the cure remained perfect.]

ART. 79.—*Successful case of Amputation of the Thigh at the Hip-joint.* By WILLIAM SANDS COX, Esq., Senior Surgeon to the Queen's Hospital, Birmingham.

(*Condensed from the Dublin Quarterly Journal,* May 1846.)

The patient, aged 23, fourteen years previously had undergone amputation of her left leg, above the knee, in consequence of disease of the knee-joint. Three months after her discharge, on this first occasion, ulceration took place around the cicatrix which at different times afterwards, partially, but never completely, healed up. After the lapse of six years the integuments became indurated, and painful fungous growths began to show themselves, and at length, eight years after the operation, she was compelled to have recourse to surgical aid.

On admission to the Birmingham Infirmary, the integuments, for about three inches anteriorly and four and a half posteriorly, above the extremity of the stump, were found to present a dull white, glazed, and corrugated appearance, and were of cartilaginous hardness, like an old cicatrix, interspersed with livid and extremely sensitive fungous growths, projecting nearly half an inch from the surface, and bleeding slightly on being touched. There was no other appearance of local or constitutional disease; but the patient states "that her general health has been good, and that her catemenial periods have occurred regularly every five weeks; that her father died asthmatic, and that a short time previous to his death a tumour, of what character she knows not, appeared in his axilla; that her mother died in a decline, as also did her only sister; and that she has three brothers living, who enjoy good health."

Disarticulation having been resolved on, it was performed on the 1st of November, 1844. Although not more than five ounces of blood were lost great depression followed the operation, but it was relieved by the administration, in the first instance, of half a pint of wine, and afterwards by a mixture consisting of bicarb. potass., tr. hyoscy., and mist. camph., given in effervescence with lemon-juice every three hours. The pulse, which on the patient's being put to bed was 90, rose in the evening to 100, the next day it was 110, and the following 120; which rate it maintained during four days, when it began to be less frequent, and for a few days more continued at about 90. It then rose again, and, at the last

report, on the 26th of November, it was stated to be 100. The patient went on well; a little purgative medicine, with an occasional sedative, being almost the only treatment required; on the 5th of February, 1845, she was discharged, being then able to walk on crutches, and the wound completely healed. She was last heard of on the 12th of August, six months after the operation, when she was in the enjoyment of "robust health."

On dissection of the amputated limb, the bone was found to be healthy; "the muscles presented a peculiar granular appearance, were softened in texture, intersected with fibrous bands, and, with the exception of the muscles inserted into the trochanters, appeared to have undergone fatty degeneration;" the integuments, to the depth of from three eighths to five eighths of an inch, were hard, cartilaginous, of a pearly white colour, and, under the microscope, presented numerous spindle-shaped bodies, but we are not told whether with or without central nucleoli.

Mr. Cox justifies his having had recourse to so severe and dangerous an operation by the fact of the increase of the disease, in spite of treatment continued during two years, and by the constant suffering of the patient. We feel confident that few surgeons in this city would recommend the use of the knife in a case without any very urgent symptoms evidently springing out of a previous operation, and where there was good reason to suspect hereditary, or, at least, malignant disease, which, when it originates in the soft parts, is generally more to be dreaded than when commencing in other tissues. An operation in such circumstances rarely has any other effect than to suppress its external manifestation, and cause its development in internal organs. So far, however, the results are in favour of Mr. Cox's practice; but it will be very important to learn the after history of his patient.

Mr. Cox's method of operating.—The patient being placed on the edge of the table, with the limb to be operated on slightly flexed, Segnoroni's arterial compressor (which is but a pair of calipers moveable by a screw) is employed to arrest the flow of blood in the external iliac. The operator then, standing on the outside, enters the knife (which is narrow, double-edged, and about twelve inches long) a little below Poupart's ligament, and causes the point to emerge about an inch below the margin of the anus. By then carrying the knife downwards and forwards, the anterior flap, somewhat more than three inches in length, is rapidly formed, and the mouths of the vessels are secured by the hands of an assistant. The limb is now to be depressed and rotated outwards, the capsular ligament divided with the knife, and the head of the bone dislocated, afterwards carrying the knife through the joint, then close along the posterior surface of the femur, for about three inches, and lastly, by cutting downwards and backwards the operation is completed.

M. Lenoir's method of operating.—The knife is made to enter on the inside, and is passed behind the vessels and through the front of the capsular ligament. As soon as it has cut its way out, forming the one large anterior flap, which is instantly raised, and the vessels compressed by an assistant, the limb is rotated and depressed, and the head of the bone at once springs from the socket. It then only remains to cut down on the joint *from behind*, over the head of the bone, and the

operation is finished. A few trials enable one with certainty to transfix the joint, so as to divide sufficiently, in so doing, the capsular ligament. In one case which we saw operated on by the able surgeon above alluded to, we are certain that the purely operative part did not occupy twenty seconds. On this occasion the hemorrhage was restrained by the best of all arterial compressors, the fingers of an intelligent assistant.

The cause of the mortality from amputation at the hip-joint.—The real cause of the terrible mortality which has hitherto attended amputation at the hip-joint is evidently not hemorrhage, neither can it arise from the mere section of large nervous trunks. When we examine the conditions under which life is maintained, we find they consist of a number of processes acting principally or altogether on the blood. Hence it follows that a fixed and definite relation must always subsist between the quantity and quality of the vital fluid and the phenomena of composition and detrition. Where a limb is amputated, not only is a certain amount of the circulating fluid lost by evident hemorrhage, but a loss to a much greater amount is sustained by the removal of the blood, which cannot be made to flow from the vessels of the amputated part. In amputation at the hip-joint we thus abstract from the circulation one fourth or one fifth of the entire quantity of blood in the body, yet the functions of the lungs, the liver, the kidneys, &c., continue to be performed precisely as if no such diminution of the quantity of blood to be acted upon had taken place. The consequence must be that the blood returns to these organs before it has fully undergone the changes requisite to fit it for their action, and the disproportion increasing at each round, death is the speedy consequence. It is to be borne in mind, too, that not merely have the lungs, &c., suddenly to act on a much smaller quantity of blood than that for which they were intended, but also the diminished quantity of blood that passes through them has not undergone those changes which would have been effected in the capillary circulation of the part of the body which has been removed. In perfect accordance with the views here proposed, we find that the hip-joint operation is rarely attended with an immediately fatal result, as might be expected if death were caused by mere nervous shock, but that usually the patients live several days, and very rarely expire before the expiration of less than twenty-four hours. In two out of the three successful cases which have occurred in England, and in several of the continental ones, *amputation above the knee of the same side had previously been performed*, so that the element of time was introduced, and the organs were thus gradually enabled to accommodate their action to the altered state of the circulation. In many recorded cases caries or necrosis, with abscesses and disorganization of more or less of the removed member, had brought about a somewhat similar state of things, and all the other instances occurred in men who, receiving a gunshot wound, or some similar injury, in the full vigour of robust health, were enabled to bear up against morbific influences which would have speedily proved fatal to others differently circumstanced in this respect.

ART. 80.—*Therapeutical Indications in Strictures of the Urethra.* A Series of Aphorisms. By LEROY D'ETIOLLES, of Paris.

(*The Lancet*, Aug. 8, 1846.)

1. *Strictures* exist in different degrees, which, so far as regards the treatment, may be classed under the three following categories :—Strictures which permit the passage of the urine, of sounds, and bougies.

Strictures which permit the passage of the urine, but resist the passage of bougies and sounds.

Strictures which permit the passage neither of bougies and sounds, nor of the urine; that is to say, strictures accompanied by retention.

For the strictures of the last category we may be obliged to have recourse to urgent means, such as the necessity alone would authorize.

To the second category may be applied a certain number only of the curative measures.

It is only the first category which admits of a choice of all the different methods of treatment.

2. Some strictures are curable, others are incurable.

3. Many strictures, curable at first, are rendered incurable by ill-directed treatment.

4. Curable strictures cannot all be overcome by the same method of treatment.

5. In the majority of cases it is impossible, for the strictures situated beyond the meatus urinarius, to discriminate immediately in what way the treatment should be directed. It is only by the progress of the treatment that we are enabled to acquire a certitude.

6. Dilatation is the only method essentially free from unavoidable dangers; if it does not cure every stricture, it will at least aggravate none.

7. There are some valvular strictures which a single catheterism may break down or obliterate; but the greatest number demand a longer residence, or the repeated introduction, of the dilating agents.

8. The gradual temporary dilatation, performed each during less than an hour, is the simplest and most convenient manner of treatment for the patient. It is proper to try it in the majority of cases.

9. In order to perform suitably the temporary dilatation, it is of consequence to observe an almost insensible gradation in increasing the size of the bougies, of whatever kind they be, and to proceed by such a ratio as the hundredth of an inch. In this manner we avoid the reaction produced by too sudden a dilatation, and arrive sooner at the cure.

10. There are strictures which very readily yield to the temporary dilatation. By following the gradation (advised in aphorism 9), one or two hours sometimes suffice to raise their calibre from the twenty-fifth to the third of an inch. But these are strictures formed by the vascular enlargement and swelling of the mucous membrane only. Sometimes they retain these characters for several years.

11. The greatest number of strictures require the repeated introduction of the bougies for several days in rotation. At each sitting we should beware of commencing with the bougie which had been used the day before, and filled by the contraction. It is necessary to go back several gradations, and gradually remount up to that which rubs against the stricture on entering it, after having passed without interruption, one after the other, the bougies of inferior diameter.

The one which just fills up the calibre of the stricture is to be left in for five or ten minutes, after which another one is to be presented, larger by the hundredth part of an inch, which is to be left several minutes in its turn, and so on. In proceeding thus, we gain, each day, the hundredth, the fiftieth, the twenty-fifth part of an inch, and sometimes more; but on the condition of never employing force to make the bougies penetrate.

12. The dilating bodies vary according to the different degrees of the strictures. When the urethral passage has less than the seventeenth part of an inch, the fine bougies of gum, or, in their absence, of spermaceti, are alone applicable. The wax bougies, even if they could be brought to this degree of tenuity, would be too soft; the wires of lead would break, and the wires of iron or of silver would perforate the sides of the canal.

13. When the strictures are capable of admitting more than the twelfth part of an inch, we may then make use of the bougies in wax, in gum, or of metal, provided that they be well proportioned, and graduated by hundredths of an inch.

Still the gum bougies are preferable to those of wax, because they are not, like the latter, susceptible of softening, by warmth, to the point of bending upon themselves, and becoming knotted in little lumps. They are also preferable to the metallic bougies because they possess a suppleness which renders their introduction and their residence less painful, when it is necessary that they should remain. Moreover, it is easy to give the gum bougies all the necessary rigidity, when it is required, by means of a thin iron wire. The weight, too, of a series of gum bougies is much less than that of a set of tin ones, necessary for a cure.

Above the sixth part of an inch, in order not to injure the urethra, it is preferable to employ gum bougies made to the curved shape, and introduce them without the iron wire.

14. The mechanical dilators may be useful sometimes for completing the cure, and effacing altogether the inequalities of surface which the contractions leave behind them. This cannot be done by the bougies, since they are obliged to pass through the orifice of the urethra, naturally narrower than the rest of the canal.

15. The mechanical dilators which open out uniformly in all their length are objectionable, on account of the violence they exercise against the external orifice of the urethra. Those which enlarge themselves beyond this opening are preferable.

16. The mechanical dilators, which obey directly the surgeon's hand, are preferable to those which open up by means of a vice.

17. The mechanical dilators are worth nothing as a general method. Their action is too sudden for the extensibility of most strictures, and they are more painful than the bougies and sounds,

18. The permanent residence of sounds in the urethra, prolonged during several days, softens, resolves, and may cure certain strictures, which resisted the temporary gradual dilatation.

19. The enlargement of the greatest number of contracted passages which resist the temporary dilatation may be accomplished in three or four days. Sounds, larger and larger, are to succeed each other every eight or ten hours. Two of them, however, remain twenty-four hours:

the first, in order to soften the tough tissue, and prepare it for the dilatation; the last, in order to insure and maintain the dilatation.

20. In proceeding with the rapid permanent dilatation, it is not necessary to follow the almost insensible gradation in the size of the instruments, so essential to the success of the temporary dilatation. We may increase the calibre by twenty-fifths of an inch, and sometimes more, at each change of the sound.

21. In order to ensure the enlargement of the passage obtained by the permanent dilatation, it is necessary to follow it up by the daily introduction of a series of bougies during several minutes. This manœuvre, repeated during eight days, will complete the treatment.

22. The slow permanent dilatation, in which method each sound remains during two or three days, may cure some contractions, which neither the temporary dilatation nor the rapid permanent dilatation had been able to obliterate.

23. The slow permanent dilatation, as well as the sudden or rapid permanent dilatation, ought to be followed up by the daily temporary introduction of bougies, as indicated at paragraph 13.

24. Cauterization may cure some strictures, for which the three above methods of dilatation have proved ineffiacious.

25. Cauterization is practised in three different ways, viz. directly, laterally, and forwards from behind.

ART. 81.—*Treatment of Ganglions, or adventitious Cysts on the Tendons about the Wrist or Foot.* By F. C. SKEY, Esq. F.R.S.

(*The Medical Gazette.*)

A puncture with the point of a small lancet is a less painful and more certain remedy than a blow. The puncture may be sufficiently large only to allow the contents to be pressed through. A pad of lint, bound down with adhesive plaster firmly applied, will almost invariably destroy the cavity in twenty-four hours.

A case occurred in the early part of the summer, which may serve to remind us that even these cutaneous cysts will not bear rough treatment. The cyst, which was rather unusually large, occupied the back of the wrist in a youth of 18. I punctured it several times, but it returned. I then passed through it a very fine thread. I was, unfortunately, absent from the hospital on the day of his next visit, and the thread remained for a few days beyond the usual period. Inflammation followed. of a severe kind, and the youth became an inmate of the hospital for some weeks, where, having recovered from the attack of inflammation, he returned to the out-patient room with his original malady.

ART. 82.—*Bed Sores.*—To prevent these Sir B. C. Brodie recommends a lotion, composed of two grains of bichloride of lime to an ounce of proof spirit, the parts to be washed two or three times a day, beginning at an early period; it acts by generating a thicker cuticle, and may be employed in other cases where a patient suffers from pressure.

Lecture on Pathology and Surgery, 1846.

ART. 83.—*Tabular Arrangement of all the Cases of Femoral and Popliteal Aneurism which have been treated by pressure on the Femoral Arteries in Great Britain and Ireland.*

(*From the Dublin Quarterly Journal*, Aug. 1, 1846, p. 129.)

No.	Date.	Surgeon.	Locality.	Description of Aneurism.	Age of Patient.	Result.
1	1820	Mr. Todd	Dublin	Popliteal	30	Fem. Art. tied
2	,,	,,	,,	,,	27	,,
3	1825	,,	,,	,,	36	Cured
4	1824	Mr. Duggan	,,	Femoral	33	,,
5	1826	Mr. Cusack	,,	Popliteal	,,	Fem. Art. tied
6	1843	,,	,,	,,	55	Cured
7	1844	,,	,,	,,	26	,,
8	1846	,,	,,	,,	33	,,
9	1830	Sir P. Crampton	,,	Femoral	36	,,
10	1842	Mr. Hutton	,,	Popliteal	30	,,
11	1843	Dr. Bellingham	,,	,,	32	,,
12	1844	,,	,,	Femoral	35	,,
13	1846	,,	,,	Popliteal	40	Doubtful
14	1843	Mr. Liston	London	Femoral	30	Cured
15	1844	,,	,,	,,	53	,,
16	1843	Dr. Harrison	Dublin	Popliteal	29	,,
17	1844	Mr. Kirby	,,	,,	28	,,
18	,,	Mr. Allen	Haslar Hosp.	,,	32	,,
19	,,	Mr. Greatrex	London	,,	27	,,
20	,,	Mr. Porter	Dublin	,,	29	,,
21	1845	,,	,,	,,	,,	,,
22	1844	Mr. Jolley	Torbay	,,	28	,,
23	1843	Mr. Harrison	Bristol	,,	42	Fem. Art. tied
24	1845	Mr. Dartnell	Chatham	,,	38	Cured
25	1846	Mr. Mackern	Litherland	Femoral	30	,,
26	1845	Mr. Storks	London	Popliteal	32	,,
27	1846	,,	,,	,,	24	,,
28	1845	Mr. O'Farrell	Dublin	,,	32	,,
29	1846	,,	,,	,,	37	,,

Thus 29 cases of aneurism—six femoral and 23 popliteal—have been treated by pressure upon the artery leading to the sac; in four the femoral artery was tied, chiefly from want of confidence in pressure, on the part of either surgeon or patient, and in 25 instances this mode of treatment was successful. Mr. Todd's three cases, Sir Philip Crampton's case, Mr. Duggan's case, Mr. Cusack's case in 1826, and also that of Dr. Molloy and Mr. O'Ferrall's two cases, have not been before introduced into any of the notices or tables of this operation which have appeared in the periodicals.

In ten instances, local pressure on the aneurismal tumour by means of pads and bandages was used, in addition to the pressure by the instru-

ment. An examination of the published cases will show how irregularly the pressure was applied; and it is quite apparent that its removal at a particular time, even for a few minutes, and allowing the flow of blood through the sac again to take place, will undo all that had been before effected. It is moreover very possible, that in many instances the pressure has been continued far longer than was necessary.

Art. 84.—*On the Treatment of Bursal Disease of the Knee-joint.* By F. C. Skey, Esq., F.R.S.

(*Condensed from the Medical Gazette* and *Dublin Med. Press*, Sept. 9, 1846.)

The bursal disease of the knee presents itself for treatment in the form of a general swelling of the sac, containing serous or puriform fluid. If unattended with pain, the contents will probably be serous merely, and the tumour soft. It is in this stage that blistering may be unobjectionable. As the disease advances, the mass consolidates by repeated attacks of inflammation, more or less acute, till the swelling becomes a large tumour of nearly solid consistence. In the early stages, the fluid contents readily convey the sense of fluctuation to the hand; in the latter there is neither fluid nor cavity; the walls are consolidated by lymph, and the cavity, though not absolutely obliterated, is reduced to a mere fissure in size, less in proportion to the mass than the cavity of the uterus to the entire organ in early life. This conversion of a small sac into a tumour as large as a moderate-sized orange, is probably the result of the uniformly chronic nature of the inflammation that has attended its progress throughout; for the effect of an attack of inflammation, if acute, is to pass readily into suppuration, or if chronic, to produce serous effusion into the cavity. The latter is the more common result. When the cavity is once distended with serous fluid, it generally retains the condition of a sac throughout its progress. The walls may be more or less solid, but the fluid continues sufficiently aqueous to convey the sense of fluctuation to the finger. When an attack of inflammation reaches the suppurative stage, it generally terminates by obliteration of the sac, provided the abscess be punctured. This puts an end to the disease, as in the case of a common abscess.

There exists in the minds of many professional men, a deeply-rooted aversion to the puncture of a bursa; a fear of formidable inflammation extending to the neighbouring joint, the destruction of which is among the anticipated results; but such communication is exceedingly rare.

Diseased bursæ, not communicating with a joint, may be opened without danger in all situations, and in every stage of the disease. The cavities of the body, when morbid in condition, appear to be exempt from the often frightful consequences of puncture, or other form of injury that may attack them during health.

If such amount of inflammation be excited in a diseased bursa as will produce suppurative action, an abscess will form, which may be brought to a crisis if necessary by puncture; but in soft or fluid bursæ, this crisis is not requisite. The effect of a thread passed through the sac is similar to that of the same agent, in the case of hydrocele or ranula,

viz. the secretion is absorbed without being discharged by a wound, and the cavity is obliterated. But in the hard and consolidated form of the disease, the effect of the thread is that of producing suppuration. The hard mass, as it were, breaks down into a common abscess, which, when punctured, discharges its contents, and heals. In this manner I have treated diseased bursæ for many years with success. A common thread of silk should be passed through the centre of the tumour, especially so in the hard form, in order to ensure its including the central cavity, for this I believe to be necessary. The time it should be allowed to remain will depend entirely on the effect produced. Occasionally the tumour shows great indifference to its presence; at other times, and in other persons, smart inflammation follows, accompanied with considerable pain, in the course of a day or two. The inflammation may extend over the front of the joint. The thread should then be removed, and the knee fomented or poulticed; and from that period the disease may date its onward march towards a final cure. Nothing can be more satisfactory than the steady progress these cases generally make. When the bursa is large and hard, the thread should remain until a good deal of inflammation is produced, even though suppuration be established, which will be indicated by the oozing of pus from the punctures. The thread being then removed, either the abscess will become more matured, and demand relief from the lancet, or the whole mass of the disease, now become fluid, will undergo gradual absorption. I have cured many cases in the early stage in three weeks, but they more frequently require a month or five weeks, particularly when the absorption of a large mass of lymph forms a necessary part of the process of cure. When the morbid bursa is situated too deeply to allow of the application of the thread, the means I have resorted to have been injection and pressure. Such a locality is the tendinous insertion of the semi-membranosus muscle, underneath which a bursa is invariably found. This bursa is obnoxious to chronic enlargement, but unattended with thickening. The pressure of the tendon in the extended position of the leg, by forcing it outwards, gives it a more or less elongated form; and it is moreover coupled with this other peculiarity, that unless very large it disappears when the leg is in the flexed position, but when extended, the bursa is carried outwards in the form of a large round tumour, occupying the inner side of the ham, the hardness increasing in proportion to the tightness of the tendon upon it. In this situation the bursa sometimes attains a large size. It is inconvenient, but is not attended with the evils accompanying the bursa of the patella, although I believe all bursæ and ganglions about joints are a source of weakness. I have punctured, pressed, and injected this bursa, with more or less benefit. One rather remarkable case occurred in the person of a young woman, who was aged about 30, and was exceedingly fat. In her person the bursa in question, had reached a considerable magnitude, but it did not appear so large as it afterwards proved, in consequence of the unusual dimensions of her limb. I punctured it with a trocar, and drew off eighteen ounces of aqueous fluid. It filled again, and was repunctured many times, with this advantage, that it diminished gradually in size till it contained about six ounces only. I then injected it with a weak

solution of sulphate of zinc, which further controlled the secretion, till the disease ceased to be a source of annoyance to her. I do not think the sac was even then entirely obliterated, and I presume that ere long she will again require the assistance of a surgeon.

Art. 85.—*Tumour of the Neck cured by Acupuncture.*

By Dr. Enrico Costetti.

(*Bulletino delle Scienza, Med. di Bologna. Condensed from the Nouvelle Encyclographie*, Mai 1846, p. 274.)

A young woman had for six months a mobile and indolent tumour on the right side of the trachea, under the sterno-cleido-mastoid muscle: when first detected, it was scarcely the size of a hazel-nut, but had become, by degrees, as large as a walnut. The tumour was regarded as a cyst formed in the cellular membrane, containing a liquid, probably sanguineous, which had been the earliest element in the formation. It was first perceived after making an effort in raising a heavy weight, the head and neck being in a constrained position; although no painful sensation was produced, in the absence of any other known cause the patient referred it to this effort. The growth of the tumour had proceeded, notwithstanding the most diligent treatment; during which emollient cataplasms, and frictions with hemlock and with hydriodate of potassa were resorted to, and it was ultimately resolved to try the effect of acupuncture.

Acupuncture was employed five times, with an interval of a day between each operation. The first time two needles were inserted, then three, then four, then five, and on the last occasion seven. It was now necessary to allow a longer interval between each operation; since which, independent of the great pain excited by the introduction of the needles, so much swelling occurred on withdrawing them, that it was necessary to abstain from any kind of operation for some days, and to apply emollients and linseed poultices. After about a week the inflammation disappeared, and in proportion as the resolution was effected, the tumour progressively lost its original volume. Acupuncture was performed about twelve times, which was found sufficient to cure the disease, and to restore the neck to its state before the appearance of the tumour.

The last operations were done with three, sometimes with four, and once with five needles. When the operation was not painful, the needle was pushed through the tumour and skin; when the contrary was the case, the needle was made to penetrate only into the body of the tumour. The needles were allowed to remain for an hour and a half, two hours, or more. The successful issue is to be attributed—1. To repeated slight inflammation, during the resolution of which, as always happens, absorption was increased. 2. To the loss of integrity of the tissues which produced the obliteration of some of the capillary vessels, and the formation of cicatrices.

The cicatrices which form in the course taken by the needles are calculated to close the openings of the capillary vessels, and to destroy their morbid vitality. The advantages of acupuncture will be most

decided when tumours are formed of materials which are readily absorbed, as of liquids, especially when these approach in their nature to the animal fluids; when the solid parts of the tumour are in smaller quantity; and when it is essential to preserve their vitality that they should remain entire.

Thus the operation may be resorted to with great confidence when a tumour contains blood, lymph, or any other fluid which there is reason to believe has undergone very little alteration. It may be employed especially for tumours which, having a cavity or not, are composed mainly of blood-vessels, for these require more than any other solid to maintain their integrity, in order to accomplish their functions; it suffices, in fact, to obstruct completely one single point, in order to render a portion of their canals totally useless.

ART. 86.—*Paracentesis of the Bladder by the Rectum successfully performed for Retention of Urine.* By M. LINOLI.

(*Condensed from Il Raccoglitone Medico*, and the *Nouvelle Encyclog.* June 1846, p. 265.)

A young man, aged 22, of voluptuous habits, had an urethral discharge, which was cured with difficulty. The 26th of Nov. 1845, he was taken with difficulty in voiding his urine, which soon became impassable. A bath, leeches to the pubis and perineum, and a bleeding, afforded no relief. A catheter was introduced, but an obstacle was met with at the neck of bladder, through which it was judged necessary to force, when immediately pus and blood mixed with urine were discharged. The fluid contained concrete pus, which in a few moments obstructed one catheter, as well as a second and a third, which were substituted for the first. Neither injections nor suction with a piston served to re-establish the passage of the urine; but by the effect of treatment his health somewhat recovered, and the patient went out of hospital at the end of six days.

Twenty days had expired when M. Linoli was again called, and found him suffering from a similar accident. After a bath and bleeding, he once more tried catheterism, on which an obstacle was found of the same nature as on the former occasion. The bleeding was repeated without success. The necessity for puncture of the bladder being decided upon in consultation, the operation was performed with a trocar through the rectum. The urine escaped in large quantity, but mixed with flocculi of concrete pus and condensed fibrine, which required repeated injections to clear out the bladder. The canula was left in the bladder, but during the following night, the patient feeling a violent desire to evacuate his urine, and the canula, at the moment, being blocked up by a clot of fibrine, the instrument was forced out by the effort of expulsion. M. Linoli then passed very easily a gum-elastic catheter, without meeting with any resistance at the neck of the bladder. He allowed it to remain, and on the fourth day the urine began to flow by this channel. The urine having become pure, the catheter was removed on the eighth day; not a drop was then passed by the rectum. Matters improved daily, the patient left his bed on the fourteenth day, and the cure was ultimately complete.

Art. 87.—*Lithomenia—a new Plan of Treatment of Urinary Calculi.* By Dr. Dumesnil, late Interne of Hospitals, &c.

(*Medical Times*, Sept. 19, 1846.)

The extremely painful alternative of performing lithotomy, or of crushing the stone with lithotritic instruments, has, no doubt, long since suggested to many surgeons the idea of destroying calculi by the use of solvents; but the problem is so complex, the difficulties of execution so great, that all hope of obtaining that desirable result has been in some measure abandoned. The variable composition of calculi, the danger of placing irritable substances in contact with the lining membrane of the bladder, and the inanity of the researches previously made to attain the object, are fully set forth in Dr. Prout's excellent work, 'Stomach and Urinary Diseases,' p. 457. Dr. Dumesnil has not, however, been deterred by the failure of his predecessors, and in a communication replete with interest, which he has lately forwarded to the Academy of Medicine, proposes a new mode of treatment, of which we will endeavour to give a rapid description.

For the sake of lucidity we may divide the memoir before us into three sections: 1. Composition of calculi; diagnosis of their nature. 2. Action of solvents upon them. 3. Possibility of dissolving the urinary concretions in the bladder without injury to its parietes.

Section 1. For practical purposes calculi may be divided into three varieties, lithic, phosphatic, and oxalic; the two latter being most usually combined with alkalies; the former, on the contrary, remaining very frequently in its pure acid condition; hence the conclusion may immediately be drawn that one solvent cannot possibly answer in all cases, but, as Dr. Prout very justly remarks, the substances which might act upon one set of concretions in such a manner as to disaggregate them, would, in all probability, have a contrary effect upon another series. It is, therefore, of indispensable necessity to recognize the *nature* of the stone before any operation be instituted; for this purpose the analysis of the patient's urine furnishes only very uncertain data; nor does its changeable appearance give the surgeon anything like positive information.

Dr. Dumesnil seeks for the required knowledge by the application of Foureroy's method, with the assistance of an instrument of which we will endeavour to give a description in the third section. He places very diluted sulphuric acid in contact with the stone, and forms his opinion of the nature of the calculus by the examination of the liquid which returns; if it contain sulphate of lime, the calculus is a phosphate or an oxalate, and will yield to acids; if it contain no lime it is most probably formed of uric acid, and can be dissolved only by alkalies. This plan of diagnosis does not, of course, exclude the study of functional disorder, nor authorize the surgeon to neglect the information to be gathered from the use of the catheter. The great object is to introduce without danger the acid solution, and that object Dr. Dumesnil seems to have attained.

Section 2. When a fragment of phosphate of lime is placed in contact with muriatic or nitric acid it is immediately dissolved; but a calculus of phosphate is not disaggregated by the action of these acids, because they have no power on the organic cement by which the elements of the stone

are connected. This cement is readily dissolved in sulphuric acid, which also enjoys the advantage of forming soluble compounds with ammonia and magnesia. Muriatic acid, however, also destroys very rapidly the organic part of the concretion, and M. Dumesnil employs them both in equal quantities, of each half a drachm to three ounces of distilled water at 40°. The agitation of the fluid adds considerably to its power.

Alkaline solutions are to lithic calculi what acids are to oxalates and phosphates. Gay-Lussac, and Pelouze, Scheele, and Prout, have given to alkaline carbonates a fair trial, and have recognized their complete inefficacy.

Borax has appeared to Dr. Dumesnil to be a little more powerful; but a solution of two per cent. of potass in distilled water is the fluid which he has found most rapidly active: at 20° the alkaline solution dissolves the stone as well and as speedily as at 40°, a circumstance which may be, perhaps, explained by the ready formation of carbonates under the influence of heat. From his numerous experiments Dr. Dumesnil thinks himself authorized to conclude that in seven or eight hours the largest phosphatic calculus may by this method be dissolved in the bladder; he is inclined to say the same of uric acid concretions; but oxalate of lime communicates to the stones of the other form a degree of density which would render a longer period necessary for their complete destruction.

Section 3. The membrane which M. Dumesnil employs for the purpose of isolating the stone in the bladder consists of a piece of intestine, greased on both its surfaces to prevent exudation and exosmosis of the solvents through its parietes. The bag is introduced by means of a straight catheter, very slightly bent at its extremity, and is opened and closed with a steel spring. In manipulations repeated numberless times on the dead subject, the calculus was easily seized and thrown out of the sac; through the tube of the catheter the solvents were injected, and a continuous double stream was established. By numerous experiments the author proves that the acid or alkaline fluids diluted cannot by any means perforate the sac so as to come into contact with the walls of the bladder. The injection is continued for an hour and a half or two hours, according to the condition of the patient, and is repeated until the complete destruction of the stone has been obtained, or until the diminution of its size permits its extraction through the urethra. Such is the new method proposed by Dr. Dumesnil; and when it is recollected that lithotomy is one of the severest operations practised on the human frame, that lithotrity is applicable only to chosen cases, in which the bladder is healthy, the stone small and friable, and that even with these favorable circumstances it is always attended with much pain, and not unfrequently with considerable danger, it will be readily admitted that all efforts directed towards the laudable end of rendering such operations unnecessary are deserving of encouragement. The method proposed by Dr. Dumesnil, which he calls lithomenia (from λίθος, a stone, and ὑμήν, a membrane), is undoubtedly imperfect in many of its details; but it is, to say the least, an ingenious application, and will, we trust, induce others to turn their attention towards the same subject.

ART. 88.—*Remarkable Case of Aneurism by Anastomosis successfully treated by various Operations.* By Dr. J. M. WARREN and Dr. J. C. WARREN.

(*Condensed from the Author's pamphlet. Vide The Amer. Jour. of Med. Sciences*, April 1846.)

Asa Porter, an inhabitant of Nova Scotia, a healthy man, aged 33, has on his forehead, principally below the roots of the hair, a little to the right of the median line, a soft, pulsating, irregular tumour, about three inches in diameter, and from a half to three fourths of an inch in thickness, which gives him a very formidable aspect.

This tumour is of a reddish colour, becoming redder and larger when the patient is excited, either by bodily exercise or mental disturbance. It appears to consist of coils of vessels. It is easily compressed, and on removal of the pressure immediately enlarges again. A number of pulsating blood-vessels are seen to enter it from different directions, principally on the right side. Of these may be distinguished—1st. The temporal artery, which is in a very enlarged and tortuous state, as far down as the lower part of the external ear. 2d. A branch of the temporofrontal artery. 3d. The facial or angular artery from the internal commissure of the eyelids. On the left side are seen the left temporal artery, which is nearly as large as the right, and the left facial artery, which, with its fellow, the artery of the right side, and its accompanying veins, forms a vascular tumour at the root of the nose. The veins themselves are of an enormous size, passing down from the tumour on either side of the nose, covering and partially obscuring the internal commissure of the eyelids. Besides these vessels, the whole scalp in the neighbourhood of the tumour, seems alive with smaller arterial trunks, pulsating in every direction.

On compressing the temporal arteries, pulsation is much weakened, and when the facial arteries are also compressed, pulsation ceases, and the tumour becomes flaccid.

This tumour began sixteen years ago, without any known cause, by a small reddish spot on the right side of the forehead. It has gradually increased till lately, when this increase has been more rapid, especially within the last fortnight. There is an occasional throbbing of the carotid arteries, particularly in that of the right side. The patient is also subject to distressing headaches, accompanied with increased action of the blood-vessels of the tumour and of the head generally. This vibratory action of the arterial system of the head, neck, and upper extremities is quite remarkable. He is incapacitated by it from all active exertion; and is therefore ready to undergo any operation that promises to relieve him.

The course of this tumour, if not arrested by surgical treatment, can be readily foreseen. The morbid action will gradually involve other vessels, until the whole scalp becomes filled with enlarged arteries. The vessels of the eyelids, of the face generally, and even of the interior of the mouth, are likely to be involved. The patient's condition will become almost insupportable, and his life will perhaps be hazarded by the rupture of the tumour, which now seems almost ready to take place.

What means should be adopted to arrest its progress? Those which naturally present themselves are:—1st. Ligature of the carotid artery.

But the ligature of a single carotid might not suffice to arrest the flow of blood into the tumour, since the vessels which supply it, although principally derived from the right, are partly from the left carotid. The ligature of both carotids would therefore be necessary; but the result was the less likely to be successful, on account of the greater distance of the tumour from the arteries tied, and from the probability of its having a supply through the vertebral arteries, which inosculate freely with the branches of the internal carotid, the ophthalmic in this case being unusually dilated. The second mode of operating which suggests itself, is to expose the different vessels supplying the tumour, and pass a ligature upon them. The objection to this course is the length of such an operation. The tumour is much too large to admit the safe and effectual application of caustic. It cannot be cut out without the most dangerous hemorrhage. It is too large, and too much connected with the bone to admit the application of ligature *en masse*.

Oct. 31.—Having compressed, on the right side, the temporo-frontal and two temporo-parietal arteries, and, on the left side, the continuation of the temporal artery through the frontal region and the temporo-parietal, the pulsations of the tumour appeared to be arrested, and its contents were readily expelled through the large veins, running into the facial vein. Observing this, we determined to interrupt the circulation through these five vessels, three on the right side, and two on the left. Instead of exposing and taking up these vessels in the usual way, Dr. J. C. Warren suggested that much time and loss of blood would be spared by passing the needles under them. This was accordingly done, and the arteries were compressed by a ligature thrown over the needles in the form of a figure of 8. After this the pulsation of the tumour was much diminished. Venesection was then performed, and the patient placed in bed with his head elevated.

Nov. 6.—The needles were removed. Very slight soreness had been experienced from them. The tumour is diminishing in size; the vessels constituting it appear more flaccid and compressible. The soreness and all the uncomfortable sensations connected with it are lessened.

Nov. 12.—The pulsations in the right and left temporal arteries still continuing, a needle was passed under each of these directly above the ear, after which the pulsation subsided, and also the general sense of beating about the head. The patient is much more comfortable.

Nov. 21.—In consequence of a slight bleeding from the wound of a pin inserted on the 16th, we thought it best to obstruct the vessels on the anterior and on the internal part of the tumour, and passed pins in each of these situations. There is now no pulsation in the tumour; the tenderness existing on the upper part before any operation, has been increased. He had a chill from going into another room in the house; since that has had some fever.

Nov. 22.—At this date there was a sudden rupture of the tumour with considerable hemorrhage. Being hastily called, I passed two large pins at right angles with each other under that part of the tumour from which the hemorrhage was taking place. A ligature was carried around under the needles, and being tightened, the bleeding was effectually checked. It was to be feared, however, that as the pins ulcerated out the hemorrhage would recur.

Nov. 25.—Pulse natural, 75; internal sensations much improved; no vibratory motion of the arteries of the head, and none discoverable in the tumour, though a pulsation still exists. A slight œdema extends from the tumour to the nose, and to the eyelids. Occasionally a drop of blood starts from the needle wounds. From time to time leeches have been applied with great relief.

Nov. 30.—A vessel was discovered running from the left temporo-frontal artery across the left eyebrow, communicating with a branch in the angle of the eye on the right side, thence running up along the left edge of the tumour till it reached its superior posterior border. It did not produce a pulsation in this part of the tumour, but skirting along its edge for some distance there was a strong probability of its sending vessels into the morbid mass, thus tending to keep up the morbid action. The needles which were inserted on the 22d inst. caused an inflammation and induration of the tissue in their neighbourhood, and were removed without hemorrhage.

As compression of the artery rising on the forehead checked the specified pulsation, it was determined to tie this vessel. A needle was accordingly passed under it.

Dec. 1.—Before placing the ligature the vessel was compressed on the needle, without interrupting the pulsation along the edge of the tumour, embracing over the needle a vascular substance at least half an inch wide. A ligature passed in the figure of 8 over this needle suspended all pulsation. The patient had some pain, which lasted a couple of hours, after which he became quiet and suffered no longer.

Dec. 3.—Two needles have now separated from the substance of the tumour without hemorrhage. Besides the needle passed on Dec. 1st there still remains one needle at the lower part of the tumour, which was passed under an artery from the right temporo-frontal. The tumour, which has been hard from inflammation is now softened; its heat, except near the needle passed the last time, has subsided. There is now no throbbing in any of the arteries about the head. The carotid beats naturally. The patient is tranquil, feels well, and sits up, which he could not do for some time, on account of the throbbing in the head produced by any motion. He has a good appetite. His food is restricted however to half a pound of solid farinaceous matter per day, and about a pint and a half of liquid.

Dec. 6.—Although all pulsations are at an end the tumour still exists in a diminished state. Dr. Warren thought that if left to itself it would in all probability disappear without further applications, but as the patient lived at a great distance, it seemed to be a duty to see that the tumour was certainly and perfectly eradicated before he went home to Nova Scotia. This day therefore the use of caustic was commenced by the application of caustic potash, in a solid form, to the wound left by the separation of one of the needles. This wound was about one inch long and two lines wide. A little blood followed the application, which might have arisen from the pressure of the caustic, and therefore a portion of the same substance, in amount eight grains, was applied in powder.

Dec. 16.—The caustic has been applied three or four times. Twice a slight hemorrhage has occurred, requiring an intermission in its use.

A pulsatory movement having reappeared in the relics of the tumour, the application of ice two or three times a day was therefore directed to be continued as long as the patient could bear it. To-day the caustic was reapplied to the ulcerated surface, which is about an inch long and half an inch wide. The tumour is sensibly diminishing in size.

It will be unnecessary to proceed with all the subsequent details. It is sufficient to state that the different portions of the diseased mass which remained were successively attacked with caustic potash and with the occasional application of croton oil. Any small arteries which were discovered running into the tumour were treated, as in the commencement of the case, by the needles.

On April 5 an operation was performed to excise a portion of the erectile tissue which existed at the upper part of the wound, when a large vessel was opened and required a ligature.

May 20.—After the wound from the incision and caustic was nearly healed, a fulness was perceived at its lower angle, immediately above the supra-orbitar foramen. A triangular piece of the suspicious part was therefore cut out, and the supra-orbitar artery tied. The whole wound after this last operation was nearly the size of a dollar. Strips of adhesive plaster were applied to approximate its edges. The wound came together with great rapidity. In a fortnight after the last incision it was healed with a lunated cicatrix, and the parts appeared perfectly sound. The patient is in excellent health, and on this day, May 20, was discharged.

Remarks.—In considering this case the first circumstance which presents itself is its protracted and complicated treatment. The necessity of this arose from the obstinate character of the affection. The applications first made were insufficient, and additional remedies were required under the various appearances which occurred. Four different measures were successfully adopted.

1. The large vessels were interrupted by ligatures applied in a peculiar way, i. e. by needles passed under the arteries, and compression made on them by a thread in the form of a figure of 8.

2. The ligatures being insufficient to repress the action of the smaller vessels, caustic applications were resorted to for the purpose of destroying the morbid texture and in part obliterating it, by the inflammation produced by the action of the caustic. To this end a very free application was made of caustic potash, and repeated between twenty and thirty times.

3. Excision was performed of the remains of the vascular texture after the arteries supplying it had been so far obliterated as to remove the apprehension of hemorrhage.

4. Compression by adhesive plaster and a bandage had a sensible influence in finishing the cure.

The general treatment gave important aid to the local applications. The patient was kept very still, and for the greater part of the time in bed, with the head much elevated. His food was restricted to the smallest quantity, so that he was reduced for a time to a state of total prostration of the muscular power. During most of the treatment, if a small addition was made to his food its bad effect was generally seen, in the production of arterial vibrations and the recurrence of headache.

Abstraction of blood and the use of purgatives were resorted to when necessary.

It is worthy of remark, that while erysipelas prevailed all around this patient, he was never afflicted by it in the slightest degree during exposure of at least three months.

In conclusion, it may be said that this affection could only have been destroyed by a resolute and active perseverance in the various remedies continued through all the turnings of the disease.

Art. 89.—*Cure of Nævi.*—In flat nævi up to the size of a crown-piece, lint steeped in pure liquor plumbi is fastened over the part with a bandage, and wetted by fresh applications of the lead, without frequent removal. After days or weeks, the swelling becomes whiter, flatter, and firmer; soon afterwards little firm, white spots form on the surface, and the cure is certain. By means of a solution of alum and compression, nævi so large that extirpation would have been impossible have also been cured. It may be necessary to keep the remedy constantly applied for six months.

Dieffenbach's Operative Surgery.

Art. 90.—*Dislocation of the Sternal-end of the Clavicle backwards.*

(*The Monthly Journal of Medical Science,* Oct. 1846, p. 303.)

[A case of this rather uncommon accident is given in the 'Archives Médicales du Midi.']

A sailor was brought into the Hôtel Dieu of Marseilles, having been crushed between two ships. The head of the right clavicle had been forced backwards, and could be felt by the finger behind and below the summit of the sternum. The usual distress arising from congestion of the head and difficulty of breathing was not present. The method of reduction was as follows. The patient was laid on the sound side, one assistant placed his joined hands in the axilla, as if to carry the shoulder outwards and backwards, while a second assistant at the opposite side of the bed extended the fore-arm at a right angle on the arm. The arm and shoulder thus formed a lever whose fulcrum was the hands of the assistant placed in the axilla, consequently the force exerted by the second assistant was communicated by means of the fulcrum from the arm to the shoulder, and from the shoulder to the sternal extremity of the clavicle, which was thus disengaged from beneath the sternum; at the same time the surgeon directed the sternal extremity of the clavicle towards the articular surface of the sternum with the index-finger and thumb of each hand. The reduction was then effected quickly, but not without the use of considerable force. The displacement recurred spontaneously twice, but the third time the reduction was permanent. (Gazette Médicale de Paris, 22 Août, 1846.)

In a case of this dislocation, where the pressure of the head of the clavicle on the trachea caused excessive dyspnœa, we pursued the following method of reduction, which appears to us simple and probably more effectual than the above.

An assistant standing behind the patient drew both shoulders sud-

denly backwards, whilst with the forefingers and thumb we drew the clavicle forcibly forwards at the same moment. In this way reduction was instantly effected, with immediate and great relief to the patient.

[A case of this accident is recorded in our Second Volume, p. 114.]

Art. 91.—*On the Treatment of Wounds of the Arteries.*

By S. J. Guthrie, Esq. F.R.S.

(*General Conclusions in a Treatise 'On Wounds of the Arteries of the Human Body, with the Treatment and Operations required for their Cure.' Condensed from the Medico-Chirurgical Review,* Oct. 1846, p. 475.)

1. The Hunterian operation is not applicable to the treatment of a wounded artery, inasmuch as the wound of the artery communicates with the external parts, and nothing intervenes to prevent blood flowing from the wound in its side, or from its cut extremities.

2. When a large artery is divided and bleeds, the wound should be enlarged if necessary, and a ligature placed on both the ends; but if the artery be not divided the ligatures should be applied, one immediately above, the other below the injured part. The artery may or may not be then cut across at pleasure, and the limb or part should be placed in a relaxed position. A bandage should not be applied, but the edges of the wound should be simply brought together by adhesive plasters, which do not extend completely round the limb.

3. No operation is to be performed on any artery unless it bleeds at the moment of its performance, inasmuch as hemorrhage once suppressed may never return.

4. The intervention of muscular fibres, or of whole muscles, is not a sufficient reason for tying the artery at a distant part. They must be divided, if it be possible, to the extent required for a due exposure of the injured artery and its accompanying veins and nerves.

5. If the wound pass indirectly to the principal artery, from the back of the thigh for instance, to the femoral artery in front, or from the outside of the arm to the humeral artery on the inside, the surgeon may (on satisfying himself of the part likely to be injured by the introduction of a probe) cut down on the vessel opposite the part supposed to be wounded. When the artery is exposed the probe will point out the spot at which the vessel has in all probability been wounded. Pressure made below this spot on the artery will cause it to be distended and to bleed, if the flow of blood be not prevented from above; the artery is then to be secured by two ligatures, and the lower one should, if possible, be applied first.

6. The tourniquet should never be used in an operation for aneurism, or for a wounded artery. Compression by the hand in the course of the wounded vessel is allowable.

7. The blood from the upper end of a divided artery is of an arterial colour.

10. The blood from the lower end is of a venous colour, when it happens to flow immediately after the division. Subsequently it may assume more of the arterial colour, but it rarely does so for several days after the receipt of the injury, and always, or at least until a very late period, flows in a continued stream.

11. This regurgitation of blood from the lower end of a divided artery is a favorable sign; it shows that the collateral circulation will probably be sufficient to maintain the life of the extremity.

12. The collateral circulation is in almost every instance capable of maintaining the life of the upper extremity when the axillary artery is divided, and the colour of the blood which flows from the end of the artery, on its being divided, is not always as dark as in the lower extremity, and it sooner resumes its arterial colour.

13. The collateral circulation is not always capable of maintaining the life of the limb when the femoral artery is injured. The best assistance which art can give is to rub the foot and leg, in the gentlest manner, between the hands of one or two strong young women for several hours, or even for the first three or four days, relaxing this process very little even during sleep. When the vein is divided at the same time, or rendered impervious, the limb usually mortifies.

14. The collateral circulation is sufficient to maintain the life of an extremity in almost every case in which an aneurism has existed for eight or ten weeks, although it may be incapable of doing this if the principal artery has been suddenly divided, without any previous disease having existed in the part.

15. The theory and the operation for aneurism are never to be applied to the treatment of a wound which has caused a diffused or circumscribed aneurism, *whilst the external wound communicates with the artery*, unless it be impracticable to tie the bleeding vessel.

16. When an artery has been wounded, and the external opening has healed for weeks or months, so as to give rise to a diffused or circumscribed aneurism, this may be treated according to the theory of aneurism occurring from an internal cause, if the case will permit it without danger, although with one difference, that as the artery is sound the operation may be performed close to the tumour. If any doubt exist as to the capability of the collateral circulation after the external iliac has been secured by ligature, to support the life of the lower extremity, the operation should be performed at the injured part by opening the swelling and enlarging the wound, as in the case of a wounded artery.

17. When a circumscribed or diffused aneurism has formed after a wound has been opened, whether by accident or design, it is placed in the situation of a wounded artery, and should be treated as such. If the aneurism has arisen from disease of the vessel, and the wound or opening into it cannot be permanently closed, the limb is in a worse state than if the artery had been wounded by accident, because a ligature or ligatures placed on a diseased artery are little likely to be successful. They are liable to all the difficulties and inconveniences attendant on the old operation for aneurism. If a case of the kind should occur in a popliteal or femoral aneurism, situated at or below where the artery passes between the triceps and the bone, amputation, if it can be done low down, will be the best remedy. If the aneurism should have formed higher up, and the opening can be closed with any prospect of its healing, a ligature may be placed upon the artery above it; but on the recurrence of hemorrhage, which cannot be restrained by moderate pressure, the artery must be tied below, or recourse had to amputation. It

is, however, to be observed, that amputation under these circumstances, when resorted to as a third operation, rarely succeeds.

18. When an artery is wounded with a simple fracture of a bone, or with a comminuted fracture of smaller bones with an external communicating opening, both ends of the artery should be secured, and the limb treated in the usual manner.

19. When the bone broken is the femur, and the artery divided is the femoral artery, the operation of amputation will generally be advisable. It will always be so if the fracture is a comminuted one, or the shaft of the bone is extensively splintered.

20. When the broken bone injures the artery and gives rise to an aneurism, the treatment is to be first of the fracture and then of the aneurism, as soon as circumstances render it advisable or necessary to have recourse to the operation for aneurism, which can only be after time has been given for the collateral branches to enlarge, so as to maintain the life of the limb.

21. When mortification takes place in addition to, or as a consequence of, a wounded artery, amputation should be had recourse to forthwith.

22. The place of operation should be in almost all cases at the seat of the original wound, but there may be an exception, viz.—

23. When the injury has been merely a cut, just sufficient to divide the artery and veins immediately below Poupart's ligament, and mortification of the foot supervenes, amputation should be performed below the knee, or at the part where the mortification more usually stops for a time.

This rule is founded on the observation that great efforts are made by nature to arrest mortification a little below the knee. Sometimes they succeed; when they fail death is almost inevitable. The advice to amputate at this part is founded on the fact of its being infinitely less dangerous when done there than on the thigh, independently of saving a joint.

24. When mortification has *continued for several days*, and is spreading without having stopped, the constitution of the patient being implicated, as marked by fever, amputation should not be performed until the mortification has been arrested, and the line of separation well formed. In many cases, where there is great weakness or irritability of constitution, it will be advisable to defer the operation to a later period, particularly if there be hope of the patient's becoming stronger and more tranquil.

25 If the mortification has once stopped, and then begins again to spread, it will never again cease to extend, and amputation may give some chance of life.

26. Amputation of the arm should never be had recourse to in consequence of a wound of the axillary artery, unless mortification takes place.

27. When mortification takes place after the operation for aneurism, the surgeon must be guided by the state of the patient's constitution, in resorting to, or refraining from, amputation.

28. When hemorrhage occurs from the surface of a stump, the artery should be tied at the part from which the blood comes in the first instance, if it can be easily done. If this should not suffice, the artery

must be tied higher up, just at such distance as will afford a fair hope of its not having been affected by the derangement of the stump, which has led to the failure of consolidation in the extremity of the artery, yet not too high to admit of the junction of any large collateral branches. If the bleeding proceeds from several small vessels, and cannot be arrested, the principal trunk should be tied immediately above the diseased part, and the patient removed to a purer atmosphere, without which an operation rarely succeeds.

29. When an aneurismal tumour mortifies it is improper to tie the artery above the tumour, because it will be obliterated if the mortification be arrested by the efforts of nature, which the operation may interfere with, and even prevent, whilst, if the mortification spreads, it will be a matter of supererogation, and only hasten the patient's dissolution. When an aneurism inflames, is opened by ulceration, and bleeds profusely, so as not to be arrested, it is a proper case for amputation, if such an operation can be performed. (p. 85.)

ART. 92.—*Case of Displacement of the Vertebræ cured by Extension.* By WILLIAM H. CROWFOOT, Esq., Surgeon to the Beccles Dispensary.

(*Provincial Med. and Surg. Journal*, Oct. 7, 1846, p. 473.)

On the 5th of July, 1839, Anthony Callow, aged 42, by occupation a coachman, whilst driving a carriage through a covered gateway, was caught by a beam on the back of his neck as he was in the act of stooping forwards, and the horse rushing on, he was bent completely double. On removal from the box of the carriage his lower extremities were found to be *perfectly paralysed*. On examination of the back there was discovered a great deformity about the ninth, tenth, eleventh, and twelfth dorsal vertebræ, occasioned by an increased posterior curvature; the spinous processes of the ninth and tenth vertebræ were divided from each other considerably beyond their usual distance, the body of the ninth vertebra having been forced forwards, whilst that of the tenth projected backwards. The abdomen became almost immediately distended; the ability to empty the bladder was lost, and there was a *total* deprivation of the power of voluntary motion and of sensation in the lower extremities. No doubt existed in my own mind, and those of my son and of the respectable professional men who were present, that displacement of the bones of the spine had taken place, and that there was pressure on the spinal cord. There was too much reason to fear that this case would terminate, as all similar ones which I had seen had done, fatally. Unwilling, however, to leave the poor fellow without making some decided effort to relieve him, we determined to try the effect of cautious extension, and I applied it in the following manner:

After the bowels had been emptied by an enema, and the bladder by a catheter, a broad and well-padded belt was passed round the chest and under the arms, and it was fixed from behind to a strong staple at the upper end of the frame of the bed; another equally broad and well-padded belt was buckled round the body just above the pelvis: this latter belt had two very strong straps attached to it, one before, the other behind, each having a strong iron ring at its extremity; these

straps were brought between the thighs, care having been taken to avoid pressure on the penis and scrotum, and made fast to the pulleys. A gradual but considerable extension was now kept up, whilst some slight attempts were made by the pressure of the fingers to aid the replacement of the bones. The deformity of the spine was evidently diminished by the extension, whilst the pressure on the posterior tractus of the spinal cord was so far relieved as to permit an almost immediate restoration of a certain degree of sensibility in the parts below the injury, where it had been entirely lost; but there was not the slightest return of voluntary motion. An important point had, however, been gained, and a hope was excited that the spinal cord, partially relieved as it was, might gradually accommodate itself to the still altered form of the bony canal, and ultimately resume its functions, provided proper means were used to retain the amended position of the bones, and to obviate the inflammation which could not fail to follow such an accident.

The patient was placed on his back on a firm bed in such a manner that his fæces could be removed without his being disturbed, and the most perfect rest was enjoined. For the first nine or ten days from six to ten ounces of blood were daily taken away, from each side of the spine, alternately, with great relief to the feelings of the patient, who was most cautiously raised on his side by the sheet for the purpose, and afterwards as cautiously placed on his back. The catheter was introduced two or three times a day for about a fortnight, when its use was no longer required. At this time the patient was accidentally seen by Mr. Dalrymple, of Norwich, who was not very sanguine as to the ultimate success of the treatment, though well satisfied with what had been already accomplished. The case went on favorably; the patient steadily improved, and at the end of three weeks he could slightly move the great toe of the right foot; in a few days after, that of the left foot, and gradually this power extended over the other muscles of the lower extremities and pelvis. At the end of two months from the time of the accident Callow was able to support himself upon his legs with but little assistance; he slowly recovered the use of his lower limbs, and at the end of a twelvemonth was again able to mount his box and take care of his horses. Horse exercise, or walking any great distance, is apt to produce pain in the loins, and some degree of numbness in the limbs, but he is otherwise in perfect health, and is one of the best grooms in the country. There remains still some degree of deformity about the injured part, and an unusual separation between the spinous processes of the ninth and tenth vertebræ. (*Vide Report on Surgery.*)

SECT. IV. RARE SURGICAL CASES.

ART. 93.—*Foreign Body in the Tongue during thirty-two Years.*—A German soldier was wounded, in the battle of Gross-Gorschen (2d May, 1813) by a musket-ball, which penetrated the left cheek, carrying away the four molars of the upper jaw, and passing through the tongue, made its exit through the left cheek, carrying away several teeth of the

left side of the under jaw. The wounds healed in six weeks, and, except the loss of the teeth, no other deformity remained but the cicatrix of the tongue, which did not impede his speaking or chewing. During the spring of the year, at which time the patient was subject to pulmonary and cerebral congestion, severe pains, with slight swelling of the tongue came on, to which was added, in the year 1829, a small swelling of its right side, which suppurated and discharged thin matter, after which it gradually healed. On the 2d of May, 1845, a similar swelling made its appearance in the same place, which opened without discharging any matter, and, after some days, what appeared to be a small piece of bone presented itself in the opening, which, on being removed, proved to be the second molar tooth, which had penetrated the tongue from the musket-shot thirty-two years previously, and had during the whole time caused no great inconvenience. The roots of the tooth were broken off by the neck, and the whole surface was covered by calcareous deposit.

Oester. Medicin. Wochenschrift.

ART. 94.—*Extraction of a Metallic Substance impacted in the Gullet.* By F. A. BULLEY, Esq., Surg. to the Royal Berkshire Hospital, Reading.

(*Condensed from the Medical Times*, June 20, 1846.)

I was requested to attend Mr. J. L., who, I understood, had accidentally swallowed something that had become impacted in the œsophagus, the exact nature of which, from the patient's being unable to articulate clearly, I could not at first make out. From the fear and confusion produced by his distressing condition, as well as from the pressure of the foreign substance, whatever it might be, upon the trachea, his power of utterance was almost entirely gone, and he could merely utter the words "plate," "teeth," "bone," but it was evident that unless I were fortunate enough to relieve him quickly he would soon sink from suffocation. I placed the patient in a chair without delay, and, passing my fore-finger down the œsophagus as far as it would reach, I succeeded in just touching some hard substance which appeared to be slowly making its way downwards; for whether from my having accidentally assisted its passage by the slight pressure of my finger, or from some other cause, I could not after a few moments continue to feel it; the embarrassment of his breathing was momentarily increasing, and he seemed to be otherwise in a very critical condition.

The continued presence of the finger in the gullet produced a violent and excessive inverted action in the tube, and again, fortunately, brought the substance within reach, but whether it was actually moved upwards, or whether, being still impacted, it was merely lifted up by the general spasmodic elevation of the œsophagus which happens in the act of vomiting, I am not prepared to say.

I now passed a pair of short-curved polypus forceps by the side of the finger, and while the substance was still in contact with the end of the finger, succeeded in catching it between the blades; feeling certain by the touch that it was of a metallic nature. Continuing my finger in the gullet, I succeeded by its assistance in so easing the substance off the

sides of the passage, as to enable me to draw it upwards with some little difficulty for the space of about an inch. When it had arrived opposite the central portion of the thyroid cartilage its further progress was stopped, probably from some part of it having become entangled in the soft posterior wall of the larynx; the difficulty of breathing increased, and he seemed momentarily in danger of suffocation. I could now no longer afford any assistance by my finger, and as, moreover, its continued presence in the tube appeared to increase his suffocating feelings, I was obliged to withdraw it. As there was, apparently, at this critical moment, no probability of extracting the substance but by sheer force, and feeling unwilling after getting it so far to relinquish my hold of it, I endeavoured, with the forceps in both hands, using a twisting motion, to bring it into the pharynx, in which I fortunately succeeded, when the instrument slipped, and I ultimately removed the foreign body with my finger. The operation was followed by hemorrhage to the extent of about four ounces, which was, however, subdued by the patient's drinking plentifully of cold water. The substance extracted proved to be a gold framework or plate used for the fixture of artificial teeth, and measured exactly two and a half inches in its longest diameter, and one inch and a half in the shortest. Attached to its anterior edge were two artificial teeth intended to supply the place of the two central incisors of the upper jaw, and on its under surface further back were two gold pins, which had been used to fix two other teeth, but which had become separated from the pins, and were lost some time before the accident. The hooked extremities of the plate were intended to fix it to two of the natural molar teeth, and it was to the circumstance of these teeth having become decayed that the patient attributed the loss of its attachment to the jaw.

When he had somewhat recovered his power of speech and self-possession, he told me that he was awoke in the night by an odd sensation in his throat, "as if" (to use his own expression) "a part of the gristle of his windpipe had got out of order," the idea of his having swallowed the teeth not having crossed his mind; that he then passed his finger down his throat, and succeeded in pressing the body downwards, when he felt satisfied that he had "righted the part," and experienced little further inconvenience for half an hour, during which time he thought he must have gone to sleep, as he felt suddenly to awake with a suffocating sensation, which increased until the period when he reached my house.

His recovery was rapid and uninterrupted. The morning following the extraction he complained of a fulness in the throat, and a great stiffness in the part, especially in swallowing. These symptoms were relieved by the application of ten leeches, followed by a bran poultice made with a decoction of camomile and poppy-heads. He was ordered to take some demulcent medicine, and to abstain entirely from solid food, his principal aliment consisting of very thin arrowroot, which he said relieved the stiffness and pain more than anything else he took. He had scarcely any fever during the period of his convalescence.

At the end of a week he was so far recovered as to be able to take toast and a little animal food without inconvenience; from this time he gradually improved, losing all uneasiness in the part, and has ever since remained perfectly free from any uneasiness in the throat.

Had I been aware of the ragged and uneven nature of the substance to be extracted I might, perhaps, have hesitated about using the degree of force sufficient to dislodge and remove it, for fear of lacerating the œsophagus and injuring some important vessel, which might have proved immediately fatal. The most singular parts of the case were the remarkably small amount of injury done to the œsophagus by the somewhat violent extraction, the freedom from after bad consequences which the patient experienced, and the trifling hemorrhage that followed it.

ART. 95.—*Catheter broken in the Urethra; removed from the Bladder by Lithotomy.* Reported by FREDERICK WILDBORE, Esq., House Surgeon to the Westminster Hospital.

(*The Lancet*, June 27, 1846, p. 696.)

William G., 53 years of age, a very stout, well-conditioned man, was admitted April 11th, 1846, under the care of Mr. Hale Thomson. He stated that a portion of a gum-elastic catheter, two inches in length, was in his urethra, behind a stricture very far down, from which he had suffered for twenty years. He had been an inmate of the Westminster Hospital at three several periods for this affection, since which the stricture had been so troublesome that he had daily to pass a catheter himself. For the last seven years the urethra had become so thickened and closed up that nothing but a small-sized catheter (No. 3) could be passed. It was in using this instrument two days previous to his admission, that a portion broke off, and was retained apparently very near the neck of the bladder. For several years past he had experienced great irritability of that organ, and all the symptoms of diseased prostate; there had been a constant discharge of mucus with the urine for the last five years. The usual symptoms during that period were, on his admission into the hospital, but little if at all aggravated; he seemed to suffer merely from the alarm. To allay the irritation, a decoction of the pareira brava with liquor potassæ was ordered to be taken three times a day, and a tepid bath every other night. For three weeks this treatment produced so much tranquillity that it began to be doubted whether a portion of the catheter had really been left behind, especially as nothing could be detected when a small staff was passed into the bladder. After this period, however, the irritability of the bladder gradually increased, the mucus was passed in very large quantities, and became streaked with blood; the desire to make water was incessant, and the pain at the neck most excruciating. Immediately after voiding his urine, he complained of a sensation of the most tormenting itching over the whole surface of the perineum, for which he tore himself with his nails in the most violent manner. He could at last only pass his urine in drops, and that only in a kneeling position, with his head pressed firmly against the bed, and he declared that every drop he voided produced the sensation of boiling water passing from him. Under these circumstances, although nothing could be detected by sounding, the lateral operation was performed by Mr. Hale Thomson. Considerable difficulties presented themselves, from the impossibility of introducing a moderate-sized staff, the cartilaginous state of the urethra, and the great depth of the perineum of so

fat a man. With care, however, a scalpel was carried along the finger by the side of an exceedingly small staff, and the bladder was opened. On introducing the finger the catheter was found lying across the bladder, and very tightly grasped; it was, however, easily removed, though completely coated with the triple phosphate throughout its whole extent. A gum-elastic tube was placed in the wound, and the patient removed to bed. A slight rigor was experienced immediately after the operation. Twenty drops of Battley's solution in an ounce of camphor mixture were given. At 11 p. m. the pulse was 108, soft and full, and one grain of acetate of morphia was given.

From the moment of the operation not a single bad symptom occurred, save the slight rigor on the evening of the operation, and a little obscure pain on the two following mornings over the pubes. The treatment consisted of opiates, hyoscyamus, colchicum, pareira brava, and acidulated drinks. The man was discharged cured.

Remarks.—This case presented all the untoward circumstances that were usually met with in those subjects considered the most unfavorable for lithotomy. The difficulties might be thus enumerated. A large, fat man, who, thirty years ago, having had gonorrhœa, and subsequently abscesses in the perineum, had become the subject of confirmed stricture, from which he had suffered incessantly for the last twenty years. The sedentary habits incidental to his trade (a shoemaker) had aggravated his sufferings to an extraordinary degree, and, latterly, diseased prostate had ensued. He had so often suffered from retention of urine that the bladder had, no doubt, become thickened from its long-continued efforts to overcome the closed urethra, so that great thickening and disease of its mucous membrane were to be considered as fully established. In addition to this, the impossibility of detecting the foreign substance in the bladder by the sound, the knowledge that diseased prostate gland so frequently presented the symptoms attendant upon stone in the bladder, and the extreme smallness of the passage precluding the possibility of a proper sized grooved staff being introduced to cut down upon, all these circumstances presented a case almost unique as to difficulty. One peculiarity in the after treatment was the keeping a silver tube in the wound for nine days, a passage being thus afforded for the mucus and bloody urine that the diseased urethra would not allow of. He had another object in view for so long retaining the tube in the wound, and this was to afford time for the urethra to recover itself from the irritation to which it had been so constantly subject for a long period. The plan was most successful, for on introducing the catheter the first time, nine days after the operation, it passed so easily that the man would not believe it was in the bladder until he saw the urine running through it, and he then declared himself better in every respect than he had been for a great number of years.

ART. 96.—*Extraction of a Musket-ball, which had been lodged in the Orbit for Twenty-four Years.* By J. BRESCIANI DE BORSA.

(*Medico-Chirurgical Review*, April 1846..)

Felice, an old soldier of Napoleon's armies, was, during an engagement, struck just above the left orbit by a musket-ball, but, as a com-

rade fell dead at the same time at his side, he believed that the ball had rebounded from the orbit and killed him. For more than twenty-four years after he was continually the subject of violent pains in the left eye and to attacks of cephalalgia, the eye itself projecting much from the orbit. The numerous surgeons under whose care he placed himself from time to time, believing his tale of the rebounding of the ball, afforded him little or no relief, and in 1837 he came to the hospital at Verona. The author, upon examining the case, came to the conclusion that the projection of the eye could only be caused by the persistence of the foreign body in the orbit, for any exfoliation of bone which the blow might have caused would, in the course of so many years (the projection commencing soon after the accident), have been discharged or removed by absorption. A portion of bone was, therefore, at once removed from the orbit by the trephine. The track of the ball was found ossified, excepting at a small aperture, whence issued from time to time a little fluid. After the bone was removed the ball was felt, by means of a probe, at the back of the orbit, and removed by means of a forceps. The eye now retreated into the orbit, and after some weeks passed into a state of atrophy. The violent pains were quite relieved, and the patient died five years afterwards pleuro-pneumonia. On examination it was found that the cranial cavity had not been penetrated by the trephine, but opposite to where the bone had been removed was a deposit of osseous substance.

Art. 97.—*Inverted Displacement of the Urinary Bladder.* By J. G. Crosse, Esq.

(*Brit. and For. Med. Review, Condensed from the Trans. of the Prov. Med. and Surgical Association*, 1846.)

In the year 1829 a highly respected colleague of mine, since deceased, received under his care a healthy-looking female child, aged between two and three years, on account of a tumour about the size and shape of a walnut, projecting visibly at the external labia pudendi. It was of a florid red colour, and somewhat granulated upon its surface, so as to resemble a large strawberry; and the surgeon entertained a notion that it was a vascular tumour which might be removed by a ligature, on which account he requested me to inspect it.

After a slight examination I expressed my doubts as to its being a vascular tumour, and dissuaded him from the hasty application of a ligature. I could not, however, immediately explain its nature, having no conception how such a tumour could be formed by the displacement of parts only, without any superadded morbid growth. Towards the posterior part of the tumour, and on its sacral aspect, there was an aperture, which was conjectured to be the entrance into the displaced urethra. A very small female catheter easily entered this aperture, and passed along a channel a little to the left side of the median line; urine distilled in drops through the catheter, but there was not a gush, although the instrument had entered so far that we concluded it must have reached the cavity of the bladder. Besides what thus oozed through the catheter, slightly tinged with blood, there was an oozing of urine from another source, which was not explained until a second and more strict examina-

tion instituted a few days afterwards, on my casually coming to the patient's bedside just as the surgeon was prepared to apply a ligature round the neck of the tumour.

I now found, concealed in a fold of the tumour, and near to the posterior junction of the labia, two orifices not far asunder, from which the urine oozed, and which were evidently the vesical terminations of the ureters. On pressing the tumour firmly, as if to reduce it like a hernia, I found it yield and pass gradually behind the symphysis pubis, and within the labiæ; and under a continuance of the taxis it all retired, leaving the external parts in their proper shape and position. A passage remained, through which the tumour, on retiring, had taken its course, which was actually the dilated urethra, into which I *could* and *did* introduce my little finger, until it fairly entered the cavity of the replaced bladder, for it now became clearly demonstrated that the vascular red tumour, externally presenting itself as first described, was the urinary bladder in its entire thickness, including its mucous, muscular, and peritoneal coats, prolapsed through the dilated urethra, and at the same time inverted or turned inside out. The proper lining membrane of the bladder became, in the progress of this displacement, the external covering of the tumour. As fast as the urine was secreted by the kidneys it oozed from the terminating orifices of the ureters, which were concealed within a fold of the exposed surface of the tumour, and approximated to each other. The neck, or deepest and narrowest part of the tumour, just concealed within the labiæ, was covered by the inverted lining of the urethra, the inversion being complete.

In this instance had a ligature been efficiently applied to the neck of the tumour, as was contemplated, the bladder would have been removed, including all its coverings, the ureters cut through just above their terminating orifices, and the peritoneal cavity largely opened, with a necessarily fatal result. As the friends of the child could not be applied to, the history was imperfect. It was stated that the tumour had existed a considerable time, and been always attended by stillicidium urinæ; also that it had been once replaced, but descended again, shortly before it came under my observation. During the short period the child remained under my notice after the replacement of the bladder there was no relapse; and since this account was sent to press I have been fortunate enough to ascertain, and to be enabled to add, that the patient is still living, after an interval of sixteen years, and is a healthy young woman, save only the affliction of the incontinence of urine, with which she has been constantly troubled, but without any relapse of the vesical displacement.

PART III.

MIDWIFERY, AND DISEASES OF WOMEN AND CHILDREN.

SECT. I. MIDWIFERY, AND DISEASES OF WOMEN.

Art. 98.—*Clinical Lecture on Diseases of the Uterus.*

By Dr. Henry Oldham, Physician Accoucheur to Guy's Hospital.

(*Medical Gazette*, April 17, 1846.)

[This lecture is founded upon two cases, one of malignant fungoid disease of the cervix, the other of chronic induration with hypertrophy of the same part. The lecturer introduces his subject by remarking upon the peculiarities of the cervix, in contradistinction to the body of the uterus. The cervix is deficient in animal sensibility, being but sparingly supplied by the spinal nerves. From this arrangement it happens that many of the diseases of the part are unaccompanied with pain in the first instance, the sufferings which subsequently arise being, for the most part, dependent upon the influence of the diseased organ upon the neighbouring structures. It happens, also (observes the lecturer), that from this comparatively low organization of the cervix, reparative action is feeble, indurations or ulcerations of the part being with difficulty removed. After further remarking that in consequence of this low organization the cervix uteri is particularly prone to malignant disease, the lecturer detailed the following case, which we shall considerably abbreviate.]

Eliz. Favel, aged 37, stout, dark-haired, and of florid aspect; married 19 years; mother of three children, the last premature, fifteen years previous to admission. Ten months since first experienced pain in the back, with copious leucorrhœa. This was followed by offensive dirty-coloured discharge, with occasional hemorrhage.

On admission, general health not much disturbed; appetite and pulse good; complains of pain and numbness in the left hip, which has taken the place of the lancinating pains previously experienced. Has a constant discharge of the character above mentioned. On examination a deeply fissured, insensible, bleeding growth is found attached to the os uteri, evidently a fungoid mass. Chlorine injections were used for a

fortnight, during which time the general health was attended to. A ligature was then applied to the pedicle of the growth, and after it had come away the surface was cauterized with nitric acid.

In remarking upon the nature of this case, and comparing it with that described by Sir Charles Clarke as cauliflower excrescence, the lecturer states that the above case was not essentially different, and gives it as his opinion, that the so-called "cauliflower excrescence" is only another name for a variety of fungoid cancer. In analysing the symptoms, he refers to the state of dysmenorrhœa which had previously existed, and declares his opinion that there is not, as is thought by some, any connexion between that state and a predisposition to cancer. He calls attention to the sudden leucorrhœa, as this symptom is one much neglected by the patient herself, but is often the first indication of structural disease of the cervix, [Dr. Bennet also considers that a persistent leucorrhœa in married women always indicates a structural change of the cervix. Vide 'Half-yearly Abstract,' Vol. II, p. 295,] and he therefore advises, that in all cases where a leucorrhœa does not yield to ordinary treatment an examination should be made.

In regard to the treatment, the lecturer states that palliatives were of little service, but of these most comfort was derived from a belladonna plaster to the loins. He was not sanguine as to the cure of the above case from the length of time it had existed, but he believes that when taken early, removal, followed by cauterization of the denuded surface by nitric acid (the caustic preferred by him), will generally be successful.

The second case was that of a female, aged 31, married eight years; four miscarriages at three months, the last eight months before admission. Examination by the speculum exhibited a large cervix, bleeding when touched, with a red granulating cervix.

[The disease in question is of frequent occurrence, and is attributed by the lecturer to the abortions, aided by injurious labour too soon after the event. The symptoms were those of descent of the womb, as pains in the loins and groin; habitual puriform leucorrhœa, with occasional lumps of gluey discharge; sexual intercourse was painful, and caused bleeding. In such cases the lecturer considers it imperative to examine per vaginam. The treatment consisted in scarifying the cervix repeatedly, with lead injections, and rest, &c.: the latter, with abstinence from intercourse, are essential. In performing scarification, the lecturer causes the patient to sit upon the edge of a chair, with her clothes wrapped about her legs, when he introduces the speculum, and draws a scalpel gently over the granular surface of the cervix. In this way he is able to obtain six or eight ounces of blood with facility. He subsequently, in the present case, cauterized with the nitrate of silver every third day, with the result of healing the ulcer. In order to get rid of the hypertrophied state of the cervix, without which, as is pointed out by Dr. Bennet, ulceration is certain to reappear, the lecturer has recourse to the local application of iodine. He makes use of vaginal suppositories, consisting of two grs. of iodine and three of iodide of potassium, made into a mass with gum tragacanth; one of these is passed into the vagina at night. He is unwilling to adopt the more severe cauterization recommended by Dr. Bennet, because it is apt to implant an unyielding

cicatrix tissue in the cervix, which he states may be of serious result in a subsequent pregnancy; and he therefore, until we have further experience of the effects of the artificial sloughs produced by deep cauterization, advises the adoption of the milder means above specified.]

Art. 99.—*On Urethritis in the Female.*

By MM. Boys de Loury and Costillhes.

(*Gazette Médicale*, No. 20, 1846.)

Not many years since, all discharges from the genital organs of the female were confounded together under the title *gonorrhœa* or *blennorrhagia* whatever might have been their origin, whether from their urethra, vagina, or interior of the uterus itself. But as the female genital organs consist of several different structures, so they may either be separately influenced by an impure connexion, or be all diseased at the same time. For this reason, the authors would expel the term blennorrhagia from the medical vocabulary, and substitute the word *urethritis* for inflammation of the urethra, and vaginatis for that of the vagina.

Urethritis in the female is announced as in the male by pain and irritation in the canal, chiefly at its orifice, which becomes red and tumefied.

This state lasts from twelve to twenty-four hours, when a slight mucous discharge appears, which glues together the lips of the meatus. At the same time there is frequent desire to pass urine and scalding. From the fourth to the tenth day the discharge increases in quantity, and becomes thick and greenish. The vagina frequently becomes inflamed by contact. If left to itself and treated by simple diluents, urethritis in the female as in the male lasts from thirty to forty days. By the *abortive* treatment it is cured in half that time.

When neglected or badly treated, acute urethritis may become chronic; in this case the discharge is thin and small in quantity. The authors admit two varieties of urethritis. *Simple* non-virulent urethritis, which, however, may be contagious (true gonorrhœa of British authors), and *syphilitic* urethritis, infinitely more rare, which coexists with chancres, buboes, &c.

The authors do not believe that there are any means of distinguishing these two varieties of discharge. They state, that they have at different times practised inoculation, as a test of virulence, but without any positive results. The microscope has been equally unsuccessful.

The consequence of urethritis are not in general severe, the authors have however, met with some few cases of stricture in the female. As a consequence of repeated attacks, they mention the occasional occurrence of a vascular ring surrounding the meatus.

The treatment pursued by the authors is of three kinds, according to the severity of the case. The first method is called the "diluent," the second the "specific," the third the "substitutive, or astringent."

1. In ordinary cases, when the inflammation is acute, the patient is made to drink freely of diluent mucilaginous drinks, with the addition of nitrate of potash. Three or four baths are taken in the week, the diet is reduced, and the patient confined to bed. These means will

always cure the disease when it is not severe, but when it has become chronic it becomes necessary to exhibit more active medicines, as copaiba and cubebs. The latter is given by the authors as a saccharine tincture. The nauseous taste of the copaiba they find to be much rectified by essence of peppermint.

The *abortive* and *substitutive* treatment consists in cauterizing the meatus with the solid nitrate of silver at the commencement of this disease, care being taken previously to squeeze out the contained pus. This cauterization occasions severe pain in many cases, in others scarcely any. In a day or two the cauterized membrane detaches itself, and the discharge is found to be considerably diminished; the repetition of the operation once or twice is generally sufficient to cut short the disease. In using astringent injections, the authors advise the precaution of pressing the posterior extremity of the urethra against the pubis, to prevent the fluid entering the bladder.

Art. 100. —*On Granulation and Narrowing of the Os and Cervix Uteri, and their Treatment.* By M. Velpeau.

(*Bulletin Gén. de Thérapeutie,* Mai 1845.)

[For some years past M. Velpeau has been in the habit of referring in his clinical lectures to a state of the cervix uteri, which he considers has been too much neglected in practice. He remarks that a granular state of this portion of the organ, which has been carefully studied as it occurs on its exterior surface, has been almost entirely overlooked when it occurs on the interior aspect of the part. It thus happens that after having cured a morbid condition of the os uteri, the symptoms are still kept up by the same disease affecting a part which has not been reached either by inspection or treatment. The difficulty is in some cases also still further increased by a narrowing of what may be termed the "ostium uteri," analogous to stricture of the urethra. This narrow state, according to Velpeau, is a common cause both of sterility and dysmenorrhœa. The treatment of the affection is laid down as follows.]

Treatment of the granulations.—The most effectual treatment of this condition is by cauterization with the acid nitrate of mercury, which is employed by Velpeau with great boldness, but not with the same frequency of repetition as by others. He does not continue his cauterizations until all trace of ulceration has disappeared; but considers it sufficient in every case to modify the diseased surface by substituting one prone to cicatrization for one which is indisposed to it. His usual plan is to cauterize once in eight days, for a month or six weeks. He uses a small piece of lint carefully fixed on an appropriate handle, and with the aid of the speculum introduces this for the depth of about half an inch within the neck of the uterus, after having dipped it into the caustic; water is then injected into the vagina to remove any superfluous caustic, and the patient is after a bath enjoined to remain recumbent for a day or two. After the last cauterization, astringent injections are continued for a fortnight.

Treatment of the contraction.—In the treatment of the narrowing of the cervix uteri, M. Velpeau commences by introducing a bougie into

the womb, which sound is after a few days replaced by one of larger dimensions, until the passage becomes sufficiently dilated. He also injects the uterus with fluids either simple or medicated as the case may require. When the neck of the uterus has been restored to its proper calibre, he uses the caustic as before mentioned for the cure of the granulations.

ART. 101.—*On Rheumatic Paralysis of Nurses.* By Professor TROUSSEAU.
(*Philadelphia Med. Examiner*, June 1846.)

[The author introduced the subject of rheumatic paralysis with the following clinical remarks:]

The disease which I am about to describe is one which had never attracted my notice before 1841, and which I have never met with but in nurses. I do not attach any importance to the name I have given it; I have used the designation only for want of a better. You may observe it, at present, in a woman lying in the wards. She was confined eight months ago, and continued in perfect health, nursing her child, for the next six months, when she was suddenly affected with the disease which has brought her to the hospital. Very often during the day, the patient is seized in one of her limbs with a sensation of numbness and formication, followed by spasmodic contraction, and loss of power of the extremity; the symptoms last a few minutes, and reappear soon after in another limb, or in the tongue, throat, or eyes; in the latter case, vision becomes indistinct; a ligature applied round the limb at once produces the spasmodic contractions. These are more frequent and severe in bed, and in the sitting posture. The patient's general health is good, but the frequent repetition of the symptoms has weakened her. The first time I met with this disease I was very much embarrassed. The patient had formerly suffered from rheumatism, and I fancied that her present symptoms might perhaps be attributed to the same unknown rheumatic element, so prone to migration. I bled her, and she was cured. Since that time I have met with the same symptoms in eight or nine nurses, and in none had rheumatism preceded them, so that I still remain very much in the dark as to the intimate nature of the disease. However, venesection proves, in all cases, sufficient to achieve a cure. The nurse at present in the wards had not passed, for the last two months, a single day without numerous attacks. We bled her yesterday morning, and none have occurred since. The blood is very fibrinous. At any rate, should you meet with similar cases, gentlemen, do not be alarmed about the state of the spinal cord; be convinced that the most serious (apparently) functional disorder of the nervous system may exist without any anatomical alteration of the nervous centres. I need only advert to nervous asthma, which is so frightful to behold, and yields so readily to the inhalation of stramonium, and to fits of hysteria, to impress this point strongly on your memory.

ART. 102.—*Rupture of an Ovarian Cyst.*—[This termination of ovarian tumour will probably, now that attention is directed towards it, be less common than has been supposed. We have already given examples recorded by M. Camus. (Half Yearly Abstract, vol. II, p. 151; vol. III, pp. 148, 246). We here append another case, which occurred to Dr. James White, an American practitioner.]

The subject of the case was a widow, æt. 43, who discovered during pregnancy, 15 years back, a tumour in the left flank, of the size of an egg. She was safely delivered at the usual period, and has since borne three healthy children. After her last confinement, the tumour increased with great rapidity, and gave rise to much uneasiness.

In January last, upon making a false step, she fell with her whole weight upon the abdominal tumour. The shock was severe, and produced prostration and syncope. Upon making an examination, Dr. White found the circumscribed character of the tumour entirely gone. There was general fluctuation of the whole abdomen, and the peritoneum seemed to be the receptacle of the contents of the ruptured sac. The injury was followed by severe peritonitis, which, however, was subdued by appropriate treatment, after which convalescence was gradually and completely established. No vestige of the ovarian tumour remained.

Buffalo Med. Journ. Dec. 1845. *Amer. Jour. Med. Science,* April 1846.

Art. 103.—*On the Employment of Electro-Magnetism in Amenorrhœa and Dysmenorrhœa.* By Dr. Robert M'Donnell.

(*British Amer. Journ.* and *Dublin Medical Press,* Aug. 12, 1846.)

The writer remarks, that the practitioner often meets with instances where females have suffered for months, and even years, from complete arrest of the menses, or from their being secreted scantily, and with difficulty and pain, or where the discharge comes on abundantly and without pain at one time, whilst at the next period the patient suffers excessively, and scarcely any discharge presents itself; and, in another class, severe dysmenorrhœa has existed for years before the physician is consulted. Now there are not, perhaps, any diseases in which the ordinary courses of treatment are more unsuccessful; for, long before we are consulted, the usual effects of such derangements have become well marked upon the constitution; the system has become reduced and debilitated, and the ordinary features of chlorosis or hysteria have become well established. In such cases our treatment, however judicious, often fails completely; and we not unfrequently meet with disappointment, from the difficulty of enforcing on our patients an exact observance of our directions as to medicines, exercise, diet, &c. In other cases, the constitutional symptoms have preceded the uterine derangements, but, in both, it often happens that the disease becomes more and more confirmed; and little or no benefit being derived from the advice of the regular practitioner, the patient resorts to quack medicines and nostrums, and after a waste of time, of money, and of health, the physician is again applied to. It is under such circumstances, and in such cases, that electro-galvanism acts with the greatest success; inducing a return of the menses, when arrested, or producing an easy and abundant secretion of them, in those cases where this process has been inefficiently and painfully performed, perhaps for many years previously; and this change is soon followed by an amelioration of all the distressing symptoms under which the patient has laboured.

The best and most convenient method of applying electro-galvanism is by means of the machine sold at New York under the name of the "Vibrating Magnetic Machine," or with the apparatus made by Clarke,

of London, for a similar purpose. Each of these machines is accompanied by a short treatise, explanatory of the principles upon which it is constructed, and containing directions for its employment. The former instrument will be found cheaper, more convenient, and less likely to go out of repair than the latter.

Two insulated wires are connected to the apparatus, one being attached to each pole: at the free extremities of these wires are two platina buttons. When the machine is in operation, one of these buttons is applied by the physician to the lower portion of the spinal column, corresponding to the point of exit of the sacral nerves, and the other button is applied by the patient herself, or by a female attendant, immediately over the os pubis. In order to protect the patient from the inconvenience of getting the shock through the hand which holds the button, a thick glove should be worn.

Having desired that one button be kept firmly pressed upon the os pubis, the physician commences, by passing the other button along the spine, from the occiput to the os coccygis. After this has been done slowly four or five times, the button is then kept for five or six minutes immediately over the sacrum, and the electricity is thus passed in an uninterrupted current through the uterus. It is by no means necessary to put our patient to great torture, by increasing the strength of the shocks; more benefit will be derived from an uninterrupted and steady transmission of a moderate quantity of electro-galvanism than by occasional shocks of great intensity. The current may also be sent transversely through the pelvis, by placing a button on each hip, above the great trochanter.

Of course it is needless to add, that, with ordinary care, there need not be the least exposure of the person of the patient, for all the necessary manœuvres can be completed without removing the bedclothes—the patient lying on her side, with her back turned to the physician. In some cases it may be useful to carry the current more directly through the uterus, which can be easily done by applying one button to the sacrum, and having the other wire attached to a curved brass rod, which can be introduced into the vagina so as to touch the cervix uteri. This is the plan I have advised a medical friend to adopt in the case of his wife, who has for years been a martyr to dysmenorrhœa.

It is not proposed to employ electro-galvanism to the exclusion of those remedies whose efficacy in this condition of the system accompanying derangements of the uterus is so well established; on the contrary, they should always be employed during the intervals between the menstrual periods.

My usual practice is to administer a combination of sulphate of quinine and sulphate of iron in small quantities,—for in these cases both the stomach and head are easily deranged by large doses,—and if, as often happens, the patient be subject to constipation, I combine with the foregoing one ounce of the sulphate of magnesia to eight ounces of water. This I find to be the best and most pleasant way of combining in the same mixture the properties of a tonic, a chalybeate, and a mild aperient.

[The author reports several cases, which place the efficacy of electro-galvanism, in various uterine derangements, in a very favorable light.]

Art. 104.—*On the Ergot of Rye in Menorrhagia.*—[In our first Volume, p. 229, we have recorded our individual experience of the great advantage to be generally derived from the ergot in the treatment of menorrhagia. In the following extract from a paper by Dr. Beatty, it will be seen that the author entertains similar views of its efficacy.]

Before I conclude, I wish to record my testimony in favour of the secale cornutum, as a means of arresting severe and protracted menorrhagia, unconnected with organic disease of the uterus. For this purpose I employ it in doses of five grains, three times a day, and by its use have frequently succeeded, in cases which had resisted other plans of treatment. Great care should be taken to ascertain the absence of organic disease in these cases, and examination should be made, not only with the finger but with the speculum, for ulceration of the os uteri and polypus may exist, which will elude detection unless the latter mode be adopted. It is quite plain, that if the discharge of blood be caused by organic disease, it will not be stopped by the internal administration of the ergot, and, therefore, if it be given in such a case, the value of the remedy will be unfairly depreciated. But if, after examination, organic disease cannot be detected, the medicine may be relied upon as a very efficient agent.

[Dr. Beatty states that he has observed a cramp-like pain to follow the use of the ergot in these cases, when its action is beneficial.]

Dublin Quarterly Journal, May 1846, p. 333.

Art. 105.—*On Inflammatory Ulceration of the Cervix Uteri during Pregnancy.* By J. Henry Bennet, M.D.

(*Lancet*, Sept. 26, 1846.)

[The influence of an inflammatory condition of the os and cervix uteri upon the progress and duration of pregnancy, is briefly alluded to by the author of this communication in his recent work 'On Inflammation of the Uterine Neck,' but it has not in that treatise received as much attention as he conceives it to be deserving of. The existence of ulceration during pregnancy was first pointed out to the author by M. Boys de Loury, whose remarks upon the subject may be found extracted from the 'Gazette Médicale,' June 1845, in the second volume of the 'Half Yearly Abstract,' p. 172. The symptoms of the lesion are considered in the paper, of which the following is an abstract, under the heads of local and general symptoms. The *local* symptoms are thus stated:]

There is continued pain in the lower part of the back, and immediately above and behind the pelvis; a muco-purulent discharge, and a sensation of bearing down.

On examining with the speculum, the vulva and vagina are found red and congested, as is the case in pregnancy; but the congestion is carried to a greater extent than it naturally would be, and the redness is much more vivid. The cervix being directed backwards, retroverted, after the first few months of pregnancy, it is often rather difficult to bring it fairly into view: the difficulty may, however, always be overcome, by using either the bivalve or the conical speculum, according to the case. When the cervix has been brought fairly into view, it will be found tumid, congested, of a livid hue, voluminous, soft, or only partially indurated;

and on one or both lips, generally, penetrating into the cavity of the os, is seen a more or less extensive ulceration, sometimes covered with deep, long, fungous granulations. This great development of the granulations —this luxuriant fungousness of the ulcerated surface—is so marked in some cases, and so seldom observed in the non-pregnant state, that when it is found it may be said itself to constitute a symptom of pregnancy. I have, in several instances, recognized the gravid state of the uterus from the peculiar appearance alone of an inflammatory ulceration of the cervix. The ulcerated surface, as I have said, is generally covered with a great quantity of muco-pus, but does not bleed so readily as might be supposed from the luxuriance of the granulations. As I have stated in my treatise on uterine inflammation, the fungous character of ulceration of the cervix in pregnant women is sometimes so great, that it might occasion in the minds of persons unacquainted with the above facts, the impression that the patient is affected with malignant ulceration of the organ. I have generally found ulceration of the cervix in pregnant women beginning to assume this fungous character about the end of the third or fourth month of pregnancy, increasing gradually as it progresses.

The pains in the lumbar region are generally very severe, and often referred directly to the sacrum itself. They are continued; not merely occasioned by fatigue or over-exertion, but always to be perceived, night or day, on the patient analysing her sensations—a very important distinction in ulceration of the cervix—the lumbar pains of weakness being occasional or intermitting only. The pains in the hypogastrium, and in the ovarian regions, are also very severe, and ascend high in the developed abdomen, so as to occupy all, or a considerable portion, of its lower half. The purulent secretion is generally profuse; but as there is often a considerable white flux from the congested parietes of the vagina, the pus from the ulcer becomes mixed with it, and loses its characteristic appearance. The patient thus appears merely to have a white leucorrhœal discharge, unless the touch be resorted to, when the finger is withdrawn covered with pus. In some cases of ulceration in incipient pregnancy, I have known there to be no leucorrhœal discharge, pus being secreted only by the ulcerated surface, and being absorbed in the vagina.

General symptoms.—The natural and inevitable result of such a state as the one above described is, that the general health suffers deeply. The patient, racked with pains, which, even when not very severe, are most harassing, from their persistence, loses appetite, rest, strength, and flesh; she becomes pale and thin, a prey to cardialgia, constipation, cephalalgia, palpitation, &c. Feeling easier in the reclining position, she lies down a great part of her time, and awaits her delivery as the only probable termination of symptoms which she—and generally speaking her medical attendant—attributes to the pregnancy alone; whereas they are, in reality, the result of local uterine inflammation, susceptible, in many cases, of a speedy cure.

The symptoms which I have enumerated, and which are generally considered—although erroneously, as we have seen—merely to characterize a weak state of the health, are also those which are known to precede abortion. And so it is in reality: the inflammatory affections of the

lower segment of the uterus, which I am now describing, I have found to be one of the most frequent causes of abortion; and I am firmly convinced that they are the unsuspected cause of a large proportion of the miscarriages that occur. It stands to reason that the existence of ulcerative inflammation of the cervix uteri must keep up such an amount of inflammatory congestion of the entire uterine system, as to be incompatible with the development of the fœtus, even during the first months of pregnancy in many constitutions; thence repeated hemorrhages, and finally abortion. If the patient escapes during the first months of pregnancy, the gradual dilatation of the inflamed tissues of the cervix, which takes place in the latter months, by exciting the uterus to contract, may occasion abortion or premature labour. In one of the cases which I have attended this summer, my patient, a young married woman of four and twenty, labouring under severe inflammatory ulceration of the cervix, miscarried five times successively within the first four years of her marriage, at the end of the sixth or beginning of the seventh month.

In some instances, notwithstanding the existence of severe inflammatory ulceration of the cervix, the patient goes to her full time, and is safely delivered. But the fact of extensive ulceration existing at the uterine neck is a most unfavorable complication, rendering the patient (as well as the one in whom the ulceration is followed by abortion) very liable to general metritis, from extension of the inflammation to the body of the uterus; giving rise, even when this is not the case, to purulent and bloody discharges, which tend still further to weaken and debilitate the system. The real cause of these purulent and bloody discharges not being recognized, the therapeutic agents that are resorted to (generally speaking, anti-hemorrhagics, tonics, &c.) necessarily fail in producing any decided effect, until time, at last, with their aid, transforms the acute disease into a chronic one; the patient remaining for years a sufferer, until she eventually rallies, by the strength of her constitution and the progress of age, or sinks from uterine cancer, or some other organic disease.

Treatment.—Inflammatory ulceration of the cervix uteri occurring or existing during pregnancy, should be treated by pretty nearly the same means as when existing in non-pregnant women—that is, by local and by general agents, but more especially by the former. Astringent vaginal injections, repeated cauterization of the ulcerated surface, continence, and rest in the horizontal position, are the principal local means to be resorted to. As the general treatment must be guided by the general state of the patient, which may vary considerably, it is impossible to lay down any precise rules. I would merely remark, that mild tonics are the remedies which are the most frequently indicated, on account of the generally debilitated state of the system. The caustic that I most frequently use is the nitrate of silver, which must be freely applied, and carried into the cavity of the os, if the ulceration extends so far, as it mostly does. I rather avoid the more energetic caustics, such as the acid nitrate of mercury, wishing to localize as much as possible the action of the remedy. I do not, however, hesitate to apply it to the luxuriant fungous ulcerations which I have described, and which the nitrate of silver often does not modify with sufficient energy to ensure cicatrization. The milder forms of ulceration—those which are observed in early preg-

nancy—often heal with surprising rapidity, considering their character. This is sometimes the case with the fungous ulceration of more advanced pregnancy, but much less frequently. The latter are mostly intractable and difficult to heal, but less so, perhaps, than ulcerations of a similar character would be in non-pregnant females. In the pregnant woman the luxuriance and fungosity of the ulceration is not so much the result of the intensity of the disease as of the increased physiological vascularity and vitality of the uterus, which increased vascularity appears likewise to facilitate the healing process.

The injections which I use are the same as in non-pregnant women—solutions of sulphate of zinc, alum, acetate of lead, tannin, &c., for further details respecting which I must refer to my work on uterine inflammation.

I am not in the habit of resorting to leeches, or to scarification of the cervix in these cases, because I have not hitherto found these modes of treatment necessary; but I have no doubt that they might be resorted to without fear were they deemed necessary: it is, however, I have hitherto thought, most prudent not to adopt any mode of treatment which is calculated to interfere much, even momentarily, with the circulation of the pregnant uterus. I do not, either, use the cold hip-bath in these cases, for a similar reason.

The application of caustic to the ulcerated surface occasions, as in the non-pregnant females, but very little pain at the time, although rather severe pain sometimes comes on in the inguinal and hypogastric regions in the course of a few hours, lasting for some hours, or for a day or two. The leucorrhœal discharge is also often tinged with blood for one, two, or three days afterwards, as is the case with ordinary ulceration. This slight show need occasion no alarm whatever, as it is purely local, and the result of the application of the caustic to an ulcerated surface.

Under the influence of this treatment, the ulceration soon assumes a healthier, less luxuriant appearance, then begins to cicatrize, and finally heals.

Art. 106.—*Observations on Prolapsus Uteri.* By M. Retzius.

(*Schmidt's Jahr.* No. 9, 51 Band. 3 Heft, 1846.)

[The author's remarks upon the above form of uterine displacement are prefaced by a description of the mechanism by which the organ is retained *in situ*. This, he shows, is accomplished, by means of certain anatomical dispositions in which the peritoneum, muscles and general cellular tissue each take a share, and of each of which he gives a particular description. In reference to the arrangement of the peritoneum and broad ligaments, nothing is advanced which is either new or interesting, but the author's remarks upon the share which the muscular apparatus of the pelvis assumes in the office of retaining the uterus *in situ* are more worthy of mention.]

The muscles which mainly contribute to keep the uterus in its place are the levatores ani, the coccygei, and the transversales perinei. These muscles form the apex of a hollow cone, of which the diaphragm is the base. The parietes of this cone are likewise composed of contractile tissue, so that the capacity of the cone is subject to very considerable variation. It follows, also, that as this cavity is filled with organs which resist compression, these, when any diminution of its capacity

ensues, are forced down towards the apex, and that as much by their own weight as the action of the muscles. In a perfectly healthy person the above-mentioned muscles (the levatores ani, &c.) possess sufficient power to counterbalance the pressure from above; but if these become weakened from any cause, or the pelvic organs become preternaturally heavy, they yield, to a greater or less extent, and the contained organs fall from their normal situation. In this manner prolapsus uteri ensues when its weight is increased by hypertrophy, and to a less degree when it arises from simple congestion. In the first and second month of pregnancy, also, the weight of the womb causes it to descend deeper in the pelvis; but this defect is subsequently remedied by the rising of the organ out of the brim which takes place at a later period.

As long, then, as the pelvic muscles retain their tonicity, and support is afforded by the peritoneal investments, so long will the perineal muscles be able to offer a proper degree of resistance to the play of the diaphragm, and the inclosed organs retain their sites; and the intestines will be prevented from falling into the folds of the peritoneum between the bladder and the uterus, and again between this organ and the rectum. In the opposite case, however, and when the pressure of the pelvic viscera renders the upper pelvic aperture more horizontal, the above-mentioned organs are separated from each other, and the small intestines fall into the spaces between. Of these spaces the anterior resists the pressure the longest, but the posterior is readily enlarged into a kind of sac by the descent of the bowels. This sac having no room either behind or to the sides, is of necessity forced forwards, and at the same time descends towards the perineum until it becomes arrested by deep perineal fascia, and the muscles which lie between the rectum and the commissure of the vulva. As long as the sac remains high up between the rectum and the lateral expansions of the peritoneum, the lower part of the uterus is pressed forward, and its long axis is vertical instead of from before backwards. If, however, the sac falls deeper into the pelvis, then the posterior aspect of the uterine neck becomes more extended, and it is evident that in that case the posterior lip of the os uteri will be longer than the anterior. This is, indeed, one of the earliest signs of commencing prolapse of the organ, and shows how firmly the peritoneum is fixed to the uterus at the spot where it is reflected from that organ upon the rectum. If the pouch is still further depressed so that the intestines descend towards the mouth of the womb, the organ then descends further and further, and at the same time sometimes its fundus is directed towards the os coccygis, inducing retroversion. If the pouch of peritoneum between the uterus and bladder becomes distended in the manner above mentioned, ante-version of the womb is the consequence.

At this stage of the disease, at which it may remain stationary for an indefinite time, the patient complains of a sensation of weight and dragging in the pelvis and loins, with frequent desire to micturate. The urine as well as the contents of the bowels are passed with difficulty. At the menstrual period the patient's sufferings are much increased.

[It appears from the above remarks that the author denies the common explanation that prolapsus uteri arises from relaxation of the lateral ligaments and upper part of the vagina, and attributes it to the distension, by the descent of the bowels, of the inflections of the peritoneum, which

are to be found on eaeh side of the womb. If sueh is the true explanation, the employment of pessaries must, as he observes, be useless. The round pessary is espeeially unfit for these eases, nor ean mueh be said in favour of the oval form, the eylindrical is eonsidered to be the best, but they are all liable to induee inflammation and erosion of the cervix, or of the vaginal parietes. Of the various forms of apparatus whieh have been invented for the relief of this distressing aeeident, the author prefers Hull's abdominal supporter, modified in a slight degree upon a plan peeuliar to himself.

Art. 107.—*Description of Mr. Lund's Pessary.*—[The eonsideration of the evils whieh frequently attend the use of the ordinary forms of pessary induces us to transeribe the following aeeount of an instrument whieh is at onee effectual, eleanly, and eheap.]

The Elastic Truss Pessary eonsists of a spiral steel spring, slightly curved to adapt it to the form of the vagina, inelosed in a ease of India rubber to proteet it from the diseharges. The helix whieh it forms is not eylindrieal in its entire length, but only for one third, where it has a diameter of one ineh, the remaining two thirds being considerably flattened, so as to give it an elliptieal outline, the vertieal and transverse diameters of whieh are respeetively, one half and one quarter of an inch. It measures along its eonvex border from three and a half to four inehes. The wire of whieh it is made is about one fifteenth of an ineh in thiekness, and the space between the truss about three fifteenths. The eylindrieal portion of the spring passes gradually into the elliptieal, so that there is no pereeptible shoulder or projeetion. The spring eonstitutes the framework of the instrument. It is eovered with flannel to obliterate the interspaees between the wire, and then with sheet-eaoutehoue, whieh being fitted very aeeurately prevents any moisture from entering into the interior. This elastie eovering is passed over the larger end, where it forms a kind of eushion; while the smaller end is elosed with a piece of wood, turned into the shape of a button, whieh projeets beyond it.

The pessary is easily kept in its position by means of a band, whieh is made to pass round the waist just over the erests of the ilia, and a broad thin pad in whieh there is a button-hole, to reeeive the button just deseribed. To the eorners of this pad four tapes are attaehed, by whieh it is fastened to the band after the pessary has been introdueed into the vagina. For this purpose two of the tapes, after spreading right and left on the perineum, are earried behind the nates through loops appended to the band, and brought round in front, where they are tied to any eonvenient length. The front tapes are next tied, one being plaeed behind and the other in front of the band. In this manner the pad is made to press upon the external parts, whieh affords a eomfortable sensation of support to the patient, and if the length of the pessary has been suitably ehosen, the os uteri will be retained at its normal distanee from the orifiee of the vagina.

The following are some of the advantages whieh it is eonsidered the elastie truss pessary will be found to possess over the more eommon joints at present in use. The souree of support being situated external to the vagina and perineum, these parts are not injuriously distended in eoun-

teracting the deseent of the uterus. From the facility with which it can be removed and replaced, the patient is enabled to keep it free from those unpleasant discharges whieh are so abundant in these affections of the womb. While, lastly, from its very moderate price, it is within the reach of the very poorest person,—a matter of no slight importance, if it be recollected how frequently these displacements of the uterus occur in women who can ill afford to pay for more expensive instruments.

Guy's Hospital Reports, October 1846.

Art. 108.—*On Inversion of the Uterus.*

By John Green Crosse, Senior Surgeon to the Norwieh Hospital, &c.

(*Transactions of the Provincial Med. and Surg. Association*, Vol. xiii. New Series, Vol. i.)

[The remarks of which the following is an abstract, form the first part of an essay, historical and practieal, upon inversion of the uterus. It is a subject to which the author has devoted much time and attention, and is treated of in the present essay with much system and perspicuity.

The present portion consists of six sections, arranged under the following heads:—1. Historieal Remarks and Termology. 2. On Inversion of the Uterus after Parturition, and its different degrees. 3. On Chronie Inversion after Parturition. 4. On Inversion after Polypus. 5. Inversion from the removal of Polypus and other Tumours by Operation. 6. Inversion of the Uterus under circumstanees not included in the preeeding sections.

As the essay is one of eonsiderable length, we shall pass over the first seetion, which, however, we may obscrve is distinguished for great industry of research, and proceed to analyse the remainder as bearing more direetly upon practice.]

On inversion of the uterus after parturition, and its different degrees.—Mr. Crosse divides partial inversion of the uterus into three degrees, which he distinguishes under the terms *depression*, *introversion*, and *perversion*. Total inversion, as he remarks, exists but in one form, and does not admit of subdivision.

"*Depression*, the first division and slightest degree of partial inversion, is present when any portion of the entire thiekness of the walls of the uterus becomes convex towards its interior, without going to the extent of being invaginated. . . . . The leading symptom after the placenta is detached is hemorrhage, of which, as is asserted by some writers, it is a more frequent source than is suspected." Dewees and Mauriceau eaeh describe a case of this kind. The organ does not long remain in this eondition, it either speedily recovers itself, or under expulsive efforts the displacement becomes increased, until it assumes the character of the next degree, or—

Introversion.—The womb is said to be introverted "when so great a part of the fundus is displaced, that it comes within the grasp of the portion of the uterus into which it is received. The greatest degree of this displacement consists in the fundus being received into the remainder of the body and cervix, the convexity of the fundus being palpable at the os tincæ." This aecident may sometimes be recognized by external manipulation, but is more readily made out by vaginal examina-

tion and the accompanying symptoms. These are "a degree of faintness, great restlessness, and distress, or syncope, surpassing what the loss of blood would account for, pains in the groins, loins, and lower part of the abdomen. . . . . After some hours, and in the absence of hemorrhage, the urgent symptoms may abate, but retention of the urine is sure to happen if the introversion be in the greatest degree, the fundus descending to the cervix uteri, and keeping it dilated.

"*Perversion* is when more or less of the inverted portion of the uterus projects through the os tincæ; in its greatest degree, the whole body of the uterus, as well as the fundus, passes inverted through the os, the cervix only remaining in situ. . . . . In this degree of inversion, the constitutional symptoms are much more severe and prominent than in the lesser degrees of partial inversion. The pains extend not only to the groins and lumbar region, but down the lower limbs; the pulse is small and often scarcely perceptible, faintness, restlessness, complete syncope intervene, with distension of the abdomen, pallor, and cold perspiration. The syncope and threatening signs of dissolution are almost certain to happen if the inverted fundus prolapse externally, and retention of urine or dysury is an invariable sequel."

The author observes that, although these divisions are necessary for perspicuity of description, it should always be remembered that they pass imperceptibly the one into the other. More or less time is occupied in the progress of the accident, sometimes it is effected instantaneously, as by the injudicious traction of the cord, or it may be more slow, taking days, or even weeks, for the production of the last degree, or *perversion*. He does not believe that inversion can occur, as has been stated, after the interval of some days, not having commenced immediately after delivery.

Total inversion is where the cervix as well as the rest of the uterus is inverted. Baudelocque denies the possibility of the occurrence, but the author adduces authorities which place it beyond a doubt, (Levret, Sabatier, Leroux, Boivin, Dewees, &c.), and indeed has himself reported an incontrovertible example of the case. (Prov. Med. and Surg. Jour., June 12, 1844.) In total inversion, the uterus generally prolapses from the external parts, but may in some cases not escape from the vagina, as in the case reported by Heurteloup. (Rep. d'Anat. et Phys. Patholog. ii, 229.)

From what has been said it will be seen that Mr. Crosse considers inversion to begin, in the great majority of cases at least, at the fundus, and not, as some authors have endeavoured to represent, under the simile of the "finger of a glove turned inside out," from the cervix. In several of the domesticated quadrupeds, however, which are subject to the accident, the latter is the ordinary mode of progress of the inversion.

In all degrees of inversion, a pouch is formed by the concavity of the fundus, into which a greater or less amount of the abdominal contents subside. In the extreme case, of total inversion with prolapse, the author remarks, that a portion of intestine may thus become incarcerated, and induce all the symptoms of hernia; he has not, however, been able to give a case in which death undoubtedly occurred from this cause.

The subsequent condition of the inverted uterus when the patient does not perish from its immediate consequences is thus portrayed:

"If the uterine inversion be not corrected, and the patient survive the first shock to the system, the hemorrhage ceases, and rarely returns, until the recurrence of menstruation; the nervous symptoms also abate. The discharge, which for a time was fetid and offensive, diminishes, subsiding to a common state of leucorrhœa, and the uterus speedily diminishes in volume, resting in the vagina, and obeying the same law as to its decrement, as if it were not inverted."

Chronic inversion of the uterus after parturition is generally found in the form of the greatest degree of partial displacement, that in which the cervix only remains uninverted. "The tumour which occupies the vagina is of a pale red colour; its surface is smooth, covered with an abundant mucous secretion, somewhat sensible to mechanical violence, and bleeds easily from the slightest injury. . . . . The tumour is of great density and firmness, and is larger and softer during menstruation, the size and shape vary considerably." The author here adduces several instances, in order to determine the usual conformation of the displaced organ. This is shown to be more or less of a pyriform shape, its largest circumference being nearly equidistant from the outer extremity, which is conical, and the cervix. As the author justly observes, the recollection of this fact will generally assist the diagnosis of the affection.

In chronic inverted uterus, prolapse of the organ with all the inconveniences and suffering attached to the same displacement without inversion, is sooner or later a concomitant symptom. When the prolapse is extreme the vagina necessarily becomes inverted in its turn, and the uterus descends, "is brought down with it, and appears externally, forming a hollow tube lined with peritoneum, thin, soft, and yielding, compared to the uterus. The bladder and also the rectum may be brought down with the vagina, and the bowels may also enter into the vaginal pouch." After a considerable time, the mucous membrane of the exposed part assumes the appearance of the cutis. This part of the subject is concluded by the detail of a remarkable example of the above accident, which occurred to Mr. Chevallier, and in which the inverted uterus was removed.

[The remainder of the essay is occupied with a description of cases of inversion complicated with polypus, and inversion following the operation for the removal of the latter, also from accumulation of blood in the uterus. We shall not fail to lay before our readers the second and more practical part of the essay, including the causes, diagnosis, and treatment of inversion of the uterus, as soon as it appears.]

ART. 109.—*Case of Inversio Uteri.*—[The following case of spontaneous[?] inversion of the uterus reported in the 'Dublin Medical Press,' by Dr. Thomas R. Mitchell, Master of the South Eastern Lying-in Hospital, Dublin, may be introduced with advantage.]

I was called in great haste to Mrs. S., whom I found in charge of a medical practitioner, who stated that she had been delivered by him of her second child after a labour of eight hours' duration; the child was born naturally, and the placenta expelled in half an hour after its birth; that as he was about leaving the house she complained of acute pain in the back and groins, with a sensation of fullness about the vagina, and as if

something had given way in her abdomen. This was followed by hæmorrhage so great in quantity as to excite serious alarm; to this succeeded a number of fainting fits, from which it was difficult to arouse her. On my arrival, two hours after delivery, I found that she had just recovered from one of these fits. The bed was saturated with blood; the patient was breathing hurriedly, with occasional gasping and deep sighs; the pulse was small and thready, 125 in a minute, and the heart's action greatly flurried; the prostration of strength and collapse were so complete as to lead me to suppose that rupture of the uterus had taken place. Large quantities of hot punch had been given before my arrival without any effect. On applying the hand to the hypogastrium, the uterus could not be felt, which induced me to make a vaginal examination, when I at once discovered that the uterus was inverted in the third degree. The tumour was very sensitive to the touch, and she complained much when it was pressed. Forty minims of laudanum were given, and having oiled my right hand, I proceeded to reduce the tumour, which, with some little trouble, I succeeded in doing, by pressure at first upwards and backwards, and then upwards and forwards, in the axis of the pelvis, when I found it went up suddenly, and on following it into the uterus, I had the gratification to find that the uterus contracted firmly upon my hand. There was no bleeding of any consequence afterwards, and by continuing the use of the stimulants she gradually revived. This lady continued in a very delicate state for some time, but eventually recovered perfectly.

I should state that the gentleman in attendance positively assured me that undue force had not been applied to the cord.

This case, I think, a very instructive one, well calculated to show the necessity for a vaginal examination, if the slightest doubt exists. It is a fortunate circumstance that this formidable disease occurs so seldom, this being the first case I have ever had, although there have been upwards of 1500 women delivered since I became master of the hospital, and on referring to the registry, I cannot find an account of one out of nearly 2000 delivered prior to that period.

Inversion of the uterus has generally been attributed to mechanical causes, and I am persuaded without sufficient reason. The shortness of the funis, and the forcible dragging at it for the purpose of extracting the placenta—a practice but too common with ignorant practitioners, both male and female—have been stated as a cause. How often have I been called to cases where the force employed has been so great as to separate the cord from the placenta, and not the slightest ill consequences have resulted. Again, how often will it happen that the child shall be expelled so quickly and violently as to tear the cord across, even when the patient has been in the erect position, and yet nothing occur. At the same time I would not wish it to be supposed that I am justifying a practice which cannot be too much condemned.

ART. 110.—*On Fibrous Tumours and Polypi of the Uterus during Pregnancy, and after Delivery.* By M. FORGET.

(*Bulletin de Thérapeutique*, Avril 1846, and *Monthly Journ.* New Series, No. 1. July 1846.)

Fibrous bodies complicating delivery are of two kinds: 1st, those

enveloped in the tissues of the uterus, and termed *interstitial polypi;* and 2dly, those which adhere by a pedicle of greater or less length, the uterine polypus properly so called.

1. *The Interstitial Polypus.*—The presence of these tumours, though they do not in a remarkable degree interfere with the phenomena of pregnancy, is yet a matter of vast importance, as they expose the patient to a danger of hemorrhage, which is not easily arrested. These hemorrhages are easily explained, by the impossibility of the uterus thoroughly contracting on itself after the expulsion of the fœtus, in consequence of the obstacle which these morbid growths oppose to the contractility of its walls. The author, however, cites several cases in which these tumours gave rise to only slight hemorrhages, which were easily subdued.

Another danger to which these growths give rise is rupture of the uterus; they prevent the development of that portion of the organ to which they adhere, and the rest of the uterus undergoes excessive distension, and a proportionate thinning of its parietes. This theory is not supported by any fact.

The conclusions of the author are—1st, that these fibrous tumours are no more an obstacle to fecundation than uterine polypi; 2d, that they are not a necessary cause of abortion—that pregnancy may run through all its phases, even though they are present; and that where abortion is the result, the time at which it takes place may present a certain coincidence with the position in the uterus which the tumour occupies. Bearing in mind the mode of development of the uterus during pregnancy, it is reasonable to suppose that, if these bodies occupy the fundus, or the whole of the superior segment of the uterus (that part, in short, which is the first to be developed), that abortion will happen in the early months; and that, if it is the lower part of the uterus which is affected, abortion will not ensue until later. Lastly, observation shows that, in general, the danger arising from these tumours does not commence until parturition sets in; it is frequently followed by hemorrhage, which is often speedily fatal. A case is mentioned in which a woman, whose uterus was thus diseased, was twice delivered; the second time she suffered from a dangerous hemorrhage. If we can learn by examination that one of these tumours exists, the probability is that there are several others; for morbid anatomy shows us that they almost never exist singly.

On the second variety of polypi the author draws the following conclusions: 1. Polypi of different sizes, sometimes very voluminous, whether situated in the vagina or in the uterus, offer no obstacle to pregnancy, and but little inconvenience to parturition. We have seen abortion once only with this complication. 2. When the polypus is situated on the internal surface of the uterus during pregnancy and after delivery, the danger for the mother is imminent. When it is situated in the vagina, at the period of parturition, and has acquired considerable volume, the danger for the child is most serious. The author cites five instances of children still-born in consequence of the presence of a polypus in the vagina. In these cases, the diameters of the pelvis being diminished by the presence of a foreign body, labour is retarded, and the fœtus asphyxiated during its passage. 3. The author details the

symptoms. These our readers will find better described in the No. of 'Guy's Hospital Reports' for April, 1844.

4. It is of importance as quickly as possible to establish a correct diagnosis, not only in consequence of the hemorrhage, which the least delay may render mortal, but also from the consequence of the injuries which might result from improper interference, if the accoucheur supposed that the cause of the uterus continuing enlarged was the presence of a second fœtus, while in reality it was a polypus. This mistake has occurred, and the measures adopted in consequence were, in the words of the author, "pas étrangères à la mort de la femme." The contractions alone of the uterus upon a polypus have sufficed, when the body was large, to produce inversion of the organ. 5. The hemorrhage may be primitive or consecutive, continuous or intermitting; it is often sudden and abundant. In several instances it has not supervened until several weeks after labour. 6. As to the surgical indications, it is reasonable to delay operation when the polypus is in the vagina, and to wait (if there be no cause for haste) until the uterus has returned to its normal anatomical and physiological conditions. In the case of intra-uterine polypi, we must endeavour, by repose and opiates, to diminish the exalted sensibility and vitality of the uterus, provided the hemorrhage be only trifling; but if it be abundant we must act with promptitude, for fear the woman be exhausted. In the absence of hemorrhage, the persistence of the interior contractions and the continuance of pains equally demand the intervention of the surgeon. 7. The polypus may be noosed, excised, or twisted off, either immediately or after delivery, or later. The ligature alone ought always to be used, if the polypus is not very large; but if the weight of the body is such as to give rise to tractions which cause severe pain, the ligature may be followed by excision. Excision is to be rejected in all cases where the patient has been exhausted by hemorrhage; but even should this not have been the case, the ligature is nevertheless implicated, for the operator might meet with large vessels in the pedicle, presenting a dangerous source of hemorrhage, from the modifications the vascular system of the uterus has undergone during the recent pregnancy.

Art. 111.—*Résumé of Midwifery Statistics published during the last few years.*

(*Archives Générales*, Mars 1846.)

1. Of 35,743 labours which occurred in the practice of Dr. R., during the period included between the years 1828 and 1843, twin births occurred 386 times, and triplets once. The number of children produced was 36,131, 18,610 males ($51\frac{5}{10}$ per cent.), 17,521 females ($48\frac{5}{10}$ per cent.)

The presentations were as follows: the head presented 35,096 times, including 141 face presentations, and 6 of the ear; breech and extremities presented 930 times; 105 were cross births.

Of the 36,131 infants 33,868 were born alive, 2263 dead.

The mother died in 166 cases; of these 126 were from puerperal causes.

The placenta was adherent in 206 cases; it presented 40 times; its expulsion was followed by hemorrhage 70 times.

The forceps was used 49 times; craniotomy 38 times; premature delivery was induced in 20 cases.

Of the 126 women who died from puerperal causes, 56 died of hemorrhage; 6 after the performance of craniotomy; 3 after the application of the forceps; 2 from convulsions; 20 from peritonitis; 8 from rupture of the uterus; rupture of the vagina 1; metritis 8; diffuse pelvic inflammation 2; pneumonia 5; fever 4; intestinal irritation 2; puerperal mania 2; apoplexy 3; exhaustion 2.

Of the 2263 still births, 373 were premature; 173 in a state of putrefaction; 174 were breech presentations; 61 transverse; 32 placenta presentations; 60 were lost from hemorrhage; 37 from craniotomy; 11 from application of the forceps; 20 were monsters; 39 died from prolonged labour; 12 from convulsions; 109 from prolapse of the cord; 9 after rupture of the uterus or vagina; the remainder from unknown causes.—(Medical Gazette, Aug. 1844.)

2. Dr. De Belli gives the following account of the cases which occurred in the Lying-in Hospital of Milan between the years 1834 and 1843. The total number were 2739, of which 2551 were natural labours; 173 were terminated by artificial means; 15 were artificially induced. There were 34 twin cases. The children were 2773 in number; 1477 males, 1296 females.

The presentations are thus distributed:

1 Head.	Vertex	1st position	2447	
		2d ditto	163	
	Face	1st position	11	
		2d ditto	6	2627
2 Feet.	1st position		24	
	2d ditto		8	
3 Breech.	1st position		32	
	2d ditto		12	76
4 Transverse presentations				37

Turning was performed 51 times, in 41 of these for transverse presentations. The forceps were used in 62 cases; in 39 disproportion of the pelvis; 14 for convulsions; 7 times on account of rigidity of the soft parts; craniotomy was performed in 39 cases, and it is remarkable that 4 of these were footling cases.

Gastrotomy was performed 18 times, in 3 cases the woman was at the point of death; in 15 cases on account of deformity of the pelvis; of these one only recovered. This female died under a subsequent operation.

Of the 2739 females the deaths were 229; 113 from utero-peritonitis; 2 rupture of the uterus; 2 gangrene of the vulva; 1 from hemorrhage; and 88 from other causes.

3. The statistical information published by Dr. Murphy includes the reports of 467 labours, by which 470 children were produced, 248 males, 222 females. 498 of these labours terminated naturally, 8 artificially; viz. 4 by the forceps, 2 by craniotomy, and 2 by turning.

The presentations were: Vertex 447; face 7; feet 6; arm and shoulder 2; unnoticed 8.

Of the 467 women 454 recovered rapidly; 10 slowly; 3 only died, 2 of these from puerperal fever, 1 from cholera.

Of the 470 infants, 443 were born alive, 37 dead; of the latter 4 were premature; 4 putrified; 3 from prolapse of the cord; 2 from hemorrhage; the remainder from causes unknown.

The placenta was expelled under an hour in 362 cases; at two hours in 25 cases; at a longer interval in 23; it was removed in 21 cases. [This communication includes many most interesting observations connected with menstruation and pregnancy. It is to be found in the 'Dublin Journal,' Nov. 1844.]

4. In the Birmingham Hospital 650 women were delivered during the year 1844. From these 660 infants were produced, 373 boys, 287 girls; of these 30 were still-born. Of the women 6 died: 4 from puerperal fever; 1 from hemorrhage; 1 from disease of the uterus.

The presentations were: face 13; breech 17; feet 2; arm 4; placenta 4. The forceps were used 4 times. The mean duration of labour was 7 hours 6 minutes. (Lancet, March 1845.)

5. The experience of Dr. Toogood, of Bridgewater, gives the following results: of 1135 cases, 8 were face, 11 breech, 3 feet, and 4 arm presentations.

There was severe hemorrhage in 21 cases; presentation of placenta in 1; 24 cases of adhesion of the placenta; 2 cases of rupture of the vagina; 1 case of puerperal convulsions. In 15 instances the forceps were used; in 6 the head was perforated; 3 females died. (Prov. Med. Journ. May 1844.)

6. In 628 cases reported by Dr. Adams, twins occurred 10 times, and triplets once. In 28 cases labour required artificial assistance; 14 times by the forceps; 4 times by the perforator or crochet; 9 times by version; once by vaginal hysterotomy.

The application of the forceps was necessitated in the majority of the cases by disproportion between the head of the child and the pelvic outlet; in 4 cases it became necessary from uterine inertia.

Of the 640 infants produced, 27 were still-born (10 putrified, 17 died during labour); the deaths of the mothers were 5 in number. Among the 443 living children, 4 presented syphilitic blotches; 7 herniæ; 3 cephalhematoma; 2 club-feet; 2 harelip. (Month. Jour. Nov. 1844.)

7. Professor Campbell's statistics are to be found in our 2d Vol. p. 294.

8. Dr. Reid gives an account of 5691 labours. In these the head presented in 5443; the breech, or lower extremities, in 161; shoulder or arm in 29; face in 25; abdomen in 1; cord in 31.

Among the complications which presented themselves were—puerperal convulsions 11; retroversion of the uterus 2; rupture of the uterus 2; placenta prævia 8; hemorrhage before expulsion of the placenta 32; after 40. The forceps was used in 31 cases; craniotomy in 22; turning in 28; spontaneous evolution occurred twice.

A general summary of the above statistical information gives the following results:

Total number of labours	47,116	
Twins	446	(9 $\frac{4}{10}$ in 1000
Triplets	4	(1 in 12,000

In 41,452 cases in which the presentation is noted, it was—

Head (vertex 40,046; face 187)	40,233
Breech and lower extremities	1065
Transverse	154

In 47,116 labours, there were

Natural terminations		46,632
Artificial	Forceps	321
	Craniotomy	89
	Version	54
	Hysterotomy	20

ART. 112.—*On Incision of the Neck of the Uterus in difficult Labours, arising from Contraction of the Organ.* By Dr. LABORIE.

(*Encyclographie Médicale*, and *Monthly Journal*, June 1846.)

[The form of dystoeia, arising from rigidity of the os and cervix uteri, has been well described by Dr. Lever, who recommends for its relief a proceeding precisely similar to that here advised. (See Abstract, Vol. II, p. 184.) In most cases the rigidity may be overcome by bleeding, soothing injections, opiates, &c.; but in a certain number of cases these simple means are of no avail. It is in such that the operation, which it is the object of the author to propose, must be had recourse to. Three cases are reported, one of which alone is given in the following translation.]

A young woman was admitted into the Clinical Hospital in June 1844, having suffered from hemorrhage at various times during her pregnancy. On the 6th labour pains commenced, and continued the whole day; the membranes ruptured, but the cervix was rigid, and the os but little dilated. On the 7th a face presentation was recognized; the cervix was still rigid, but dilatation had slightly advanced. The woman was weak, but M. Dubois did not yet think it proper to interfere; at half-past one, however, as things remained in *statu quo*, an incision was made on the right side. This did not produce sufficient relaxation, so a second incision was made on the left side, when there immediately ensued a copious hemorrhage of florid red blood. M. Dubois had immediate recourse to the forceps, but failed to apply them owing to the rigid state of the cervix. Injections of cold water were then thrown up, also without effect. Eventually the bleeding was checked by the plug. In half an hour the plug was removed, and the parts having become sufficiently dilatable, the labour was speedily concluded.

[The following are the rules for the operation given by M. Laborie, and, as will be seen, agree in all material points with Dr. Lever's plan before alluded to.]

When it is wished to practise an incision, either to the left, or anteriorly, or posteriorly, the index-finger of the left hand must be introduced into the vagina, and its palmar surface applied to the spot where it is desired the incision should be made. The bistoury must then be introduced by means of the right hand, its flat surface sliding along the surface of the index of the left, until its point, passing within the cervix,

comes to be in contact with the end of the finger. By means of a semi-circular motion, the cutting edge of the instrument must then be directed perpendicularly towards the free edge of the orifice; should the latter be tense, the incision will be most readily executed, by giving to the instrument a sawing motion. We recommend all surgeons to limit the incision to the extent of a centimetre, conceiving it preferable to multiply them, should the desired result not be produced. If the incision be made to the right, the right hand must be used as the guide to the instrument.

When the cervix lies far back, it is impossible to use the bistoury for the purpose of relieving its posterior lips; in such a case, recourse must be had to the scissors. The mode of operation is nearly the same, but in order to insure that the incision does not go beyond the extent of a centimetre, a most careful examination must be made by means of the finger. The scissors are also applicable in cases of retroversion, when the anterior lip has to be relieved, as well as for lateral incisions, in those cases in which the cervix lies very much to the right or left. It will be readily conceived, that in all such displacements, the most elevated edge of the orifice would be reached with difficulty by the bistoury, as its point would be in danger of coming in contact with the walls of the uterus, and wounding them. If the use of the scissors be entirely prohibited, a bistoury with a very convex-cutting edge must be made use of.

The operator can, in general, immediately ascertain the effects of his incision; the cervix, from being hard and resisting, becomes more pliable. The influence of the operation should be particularly watched during a pain; it will then be found that the head of the child, pressing strongly on the orifice, advances more perceptibly than before. The dilatation, in a quarter of an hour after the operation, is generally sufficient to permit of the application of the forceps, should it be thought desirable to terminate the labour in that way. But should this not be the case, new incisions must be had recourse to. M. Dubois affirms, that he has never failed in accomplishing his end by following these precepts.

There is one counter-indication to the operation, which we wish particularly to specify, and that is, thickening of the cervix. When the latter has not become thin, the operation, instead of being of advantage, may be the very reverse. In this latter case, hemorrhage is most to be feared; but the incision over such an extended surface may also be the primary cause of laceration so extensive as to prove fatal.

Art. 113.—*Case of Abortion. Formation of an Artificial Vagina.* By Don Manuel Muro, Y Arrivillaga.

(*Archiv. de la Médecin. espnol., Encyclograph. des Sciences Médicales,* Mai 1846,)

A female, æt. 33, had suppuration and ulceration of the vagina, after a severe labour, which lasted six months, and caused, as it subsequently appeared, a complete closure of the canal. The narrator of the case was

called to her when again five months pregnant, and suffering with symptoms of impending abortion.

Wishing to examine into the condition of the uterus, the narrator was surprised to find that there was no entrance to the vagina, the canal being closed by a fibro-cartilaginous membrane, with the exception of a small orifice, by which a few drops of blood escaped. As the expulsive efforts of the uterus continued, it was determined to re-establish the vagina by an operation, which was performed in the following manner.

The patient being placed in a convenient posture, a sound was introduced into the urethra, and the index-finger into the rectum; a globular tumour, formed by the enlarged uterus, was discovered. The bladder was then emptied, and with a bistoury, guardedly put up to near its point, dissection was carefully performed inwards, and from right to left. This dissection made an opening, into which an assistant was able to insert his finger, thus, by making pressure upwards, to keep the bladder out of the way. The incision was then continued in the natural direction of the vagina, the tissues being successively divided with the utmost care. The bistoury was subsequently plunged into the small orifice before mentioned, and the parts lying between it and the former dissection were divided, as in the operation for fistula ani. By this means the operator was able to reach the neck of the uterus. The os uteri being small and rigid, a conical incision was made into it, and the operation was complete.

During this time the uterine contractions continued with force, and, in a quarter of an hour, the left hand of the fœtus appeared beyond the vulva. As the new vagina had not the power of dilatation of the natural canal, it was necessary to have recourse to embryotomy, in order to complete the labour.

The patient recovered, with few bad symptoms, and the artificial vagina was kept patent by prepared sponge, until perfect cicatrization had taken place.

ART. 114.—*On the Treatment of After-Pains.* By EDWARD RIGBY, M.D., Senior Physician to the General Lying-in Hospital, &c. &c.

(*Medical Times*, Aug. 29, 1846.)

We find these pains after most labours, but they vary much, both in duration and severity. They are always most severe in women who have borne many children, and in some multiparæ they continue from 24 hours to three days. These pains, in common with those of labour, depend on contraction of the uterus; and these contractions are kept up after labour, by the presence of the lochia, or of coagula of blood, or of shreds of membrane in the cavity of the uterus. The after-pains, therefore, you will easily understand, are essential to the due emptying of this organ. After-pains are not usually felt in primiparæ. In multiparæ, when the woman is quite healthy, they seldom continue very long. When very severe, and of very long continuance, they may be considered as indicating the presence of inflammation, or, at all events, of a state bordering on inflammation. The pain no longer comes and goes in distinct intermissions, but it gradually becomes constant; the uterus, too, becomes tender on pressure, and the other symptoms of inflammation are established, but we shall have

to consider this subject hereafter, when speaking of puerperal fever. It must, however, be borne in mind, that long-continued and severe after-pains may form an insidious transition to a state of inflammation.

The treatment pursued during the last few days of pregnancy has great influence in modifying the after-pains. If the woman be allowed to go, even up to the period of her labour, with her bowels confined and loaded with unhealthy fæces, and with the secretions of the primæ viæ disordered, the uterus seldom contracts well during labour, and, under these circumstances, after-pains are sometimes very severe. The too rapid expulsion of the placenta, and the hasty conclusion of the last stage of labour, so that the uterus does not contract fully and firmly, are also causes of the contractions which cause these after-pains; and, in these cases, the after-pains are useful in expelling the clots and lochia, which, if allowed to remain, would become putrid, and thus prove a source of irritation, and, perhaps, give rise to puerperal fever. When the practitioner neglects to apply the child to the breast as soon as labour is concluded, the uterus does not contract fully, as before mentioned; this, therefore, is another reason for early suckling. In speaking of the application of the child to the breast, it was omitted to mention the fact of nurses having a saying, that "the child brings after-pains." This occurs to a great extent, when the infant is not applied to the breast until the third day, and is, therefore, another reason, if more were required, for its early application.

Although after-pains are commonly, no doubt, excited by the presence of coagula in the cavity of the uterus, still they may sometimes occur when no such coagula are to be found. On this subject Dr. Burton, of York, who published in 1751, has given some curious observations, which explain one cause of after-pains very satisfactorily. Dr. Burton says, "Upon the expulsion of the child and the placenta, the orifices of the uterine sinuses must contract, and thus retain the grumous blood which is in them; hence the use and benefit of these after-pains, which, by stimulating and compressing the vessels and muscular fibres, make them exert their force to squeeze out this grumous blood, which otherwise might remain there, and occasion inflammation, suppuration, &c., from all which we find that these after-pains are necessary towards removing or preventing an inflammation of the womb; therefore, we must not be too forward in giving strong opiates, and other internal medicines, which may take them off whilst this grumous blood is lodged within those sinuses. I doubt not," continues Dr. Burton, "that those patients who die from the eighth to the fourteenth day, whose uterus has been inflamed with the symptoms above mentioned, have been injured by the too free use of opiates." The discharge, in these cases, contains little vermiform shreds, and these shreds do not consist of portions of membrane which have been left behind, but they are the casts or moulds, as it were, of the cavities of the blood-vessels, and are composed of their contents coagulated. Dr. Burton mentions a case to which he was called, in consequence of severe after-pains coming on some time after labour; in this case, having introduced his hand with some difficulty, he perceived several small membranous strings, as he then thought them, adhering to the uterus; but, he says, "I was soon undeceived, for, upon expanding my fingers, by which I stretched the womb a little, several of these came into my hand, which

I drew out, and found what I had imagined to be membranes to be only oblong grumous blood, resembling fibres, like those that adhere to a spatula after stirring arterial blood in a basin for some time. I introduced my hand a second time," he continues, "and made the experiment again, but found none of these little clots within the cavity of the womb; yet, upon expanding my hand, several came out of the orifices again, which I could plainly perceive, and, after keeping my hand there a little while, I brought away all that were in the cavity of the uterus, and the patient's complaints immediately abated, and she recovered well from that moment." These little vermiform fibres are, therefore, the casts of the blood-vessels, the contents of which had coagulated, having been retained by the contraction of their orifices. By being careful not to hasten the last stage of labour, so as to give the uterus time to contract slowly, the uterine sinuses expel their contents, and the annoyance of after-pains is, in many cases, altogether prevented.

It was formerly the practice always to administer a large dose of laudanum, to check these after-pains; and a most pernicious practice it was, but which happily has diminished considerably of late years. As much as forty minims of tincture of opium were administered as a rule in all cases by some accoucheurs. It is hardly necessary to point out the falsity of the reasoning on which this practice was founded. Opiates should never be given for the purpose of checking after-pains, unless they are very severe, or in some peculiar cases which will be hereafter considered. Should the patient, however, have been accustomed to an after-pain draught, as it is called, and seem to expect it, a little tincture or extract of hyoscyamus or of lettuce may be given her. A mild sedative may, however, in many cases be useful after labour, as when the system is in a state of irritability and restlessness, consequent on the fatigue and irritation of a lengthened period of suffering; but in these cases a small dose of Dover's powder, or of the sedative solution of opium, will always prove sufficient. When after-pains continue very severe for some time after labour, the best plan of treatment will be to give the customary dose of castor oil a little earlier than usual; this will generally relieve the pains, on bringing away a quantity of fecal matter. When the pains continue very severe, in spite of this treatment, the presence of inflammatory action may be suspected, and the treatment must be accordingly.

Art. 115.—*Ergot of Rye in After-Pains.*—Dr. Beatty observes that he has found the ergot most useful in preventing, or greatly moderating the severity of after-pains. He has seen a patient who was writhing from pain, which opium had not the power of controlling, speedily relieved by the ergot. He exhibits it for this purpose in the same manner as when his object is to restrain hemorrhage. He thinks that it acts by causing perfect contraction of the fibres of the uterus, and keeping them in this condition, and also by preventing the formation of clots in the interior of the uterus, by whose presence the spasmodic action is excited and kept up.

Dublin Quarterly Journal, May 1846.

ART. 116.—*Extra-uterine Pregnancy. Retention of the Fœtus for fifteen years, in the Abdomen. Subsequent Pregnancy, and Delivery at full term. Removal of the Extra-uterine Fœtus. Recovery.*

By THOMAS YARDLEY, M.D.

(*The American Journal of the Medical Sciences*, April 1846.)

This remarkable case occurred in the person of a female, æt. 44, who consulted the narrator for a tumour in the hypochondrium, accompanied by pain and considerable fever. The tumour was said to have existed for several years. Early in January, 1845, the patient passed a large quantity of purulent matter from the bowels; and on the following July several portions of bone, which proved to belong to a fœtus, accompanied the discharge. She gave the following history of herself.

In 1830 she became pregnant. When near the full term she had a fall, followed by pain in the abdomen, unlike labour pains, and there was no discharge per vaginam. A physician was applied to, who directed an anodyne. She had no vaginal discharge for at least a year after this pain, and at that time her catamenia appeared; her health gradually improved, and in 1834 she again became pregnant, and was safely delivered at the usual time. The surgeon in attendance remarked at the time, that there was a full-grown, extra-uterine fœtus in the abdomen, which caused some difficulty in the labour, by impeding the passage of the intra-uterine child.

After this confinement she again became pregnant two or three times, but miscarried towards the third month. Her general health, however, remained good.

Upon examination of this case, in conjunction with Professor Hodge, of the University of Pennsylvania, the femur of a fœtus was found projecting from an opening in the rectum, and the uterus was found to be pressed against the pubis by a large mass, evidently the sac containing the fœtus. The femur and one or two smaller bones were removed, but the soft parts of the fœtus were too solid to follow, and it was therefore determined to wait before any operation was performed.

About the middle of August inflammation and suppuration took place in the perineum, and at length, by enlarging the exterior opening of the abscess, an os ileum was extracted. The space between the anterior aspect of the sac and the vagina having now become very thin, it was proposed to open the sac through the vagina, but the idea was abandoned through the fear of a recto-vaginal fistula. It was therefore determined to continue the removal of such portions of the fœtus as could be reached through the original opening in the rectum. In this way the bones of the head were extracted, together with one of the thighs, with the flesh upon it, and the principal portion of the spine, with the ligaments and muscles attached. The sac was occasionally washed out with tepid injections, and in the course of time it appears that the whole of the fœtal remains were removed as the sac contracted, and in the course of three months the patient had quite recovered. The fistulous opening in the perineum healed, and the woman was not conscious of any unusual sensation in the pelvic region.

ART. 117.—*On Extraction of the Placenta before the Child.*—[At the termination of a paper on the "History, Causes, and Treatment of Placenta Previa," Dr. Edwards thus speaks of Dr. Simpson's proposal.]

Experience will decide in what varieties of placenta previa this practice is most admissible; but from what we can glean at present it seems peculiarly indicated—

1. Where the patient is of so weakly and delicate a constitution that loss of blood to any great extent would be attended with present danger, and subsequent injurious effects.
2. Where the child is well ascertained to be dead.
3. In cases in which the powers of life have been excessively lowered by the hemorrhage, and the os uteri remains firm and unyielding.
4. In cases in which, although the os uteri is dilatable, the powers of life would be unequal to the shock of turning.
5. In primiparæ, when the soft parts are so contracted that they would be liable to be bruised or torn in turning.
6, In contracted pelvis.

Lancet, July 18, 1846.

ART. 118.—*Observations on the Natural Period of Delivery.*—Dr. Leroy has observed the following circumstances in connexion with the period of delivery: 1st, the natural term of delivery, as well as premature delivery, has a certain connexion with the monthly periods; 2dly, the return of these periods during the whole duration of pregnancy agrees with the period of the month corresponding with the date of the day on which the catamenia commenced to appear for the last time, whatever may be the number of days reckoned to each month; 3dly, the premonitory symptoms of delivery at the natural period commence, in the majority of females, at the date mentioned, or during the succeeding seven days; 4thly, nevertheless, the commencement of the expulsive pains may still occur in the normal manner, at the fifteenth day of the tenth month; 5thly, every delivery which occurs before the date mentioned may be considered to be accelerated; 6thly, every delivery which occurs after that date may be considered to be retarded; 7thly, the accelerations are proportionably much less numerous than the protractions; most commonly they do not precede the time specified by more than five days; 8thly, the protractions, on the contrary, are not limited by any period; 9thly, in either case the causes of the accelerations and protractions are very appreciable in the greater number of instances.

Journal de Loire, in *Monthly Journal*, July 1846.

ART. 119.—*Difficult Labour from Impaction of the Heads in the case of Twins.* By W. ETON, Esq., Windsor Royal Infirmary.

(*Medical Gazette*, July 24, 1846.)

In this case, at the time the woman was first seen, there was presentation of an elbow and hip; as the pains were of considerable power, and the case appeared to be one in which the presentation would be naturally rectified, the operator did not interfere. At his next visit, however, his

expectation had not been fulfilled, but the arm had descended low into the vagina. As the patient was now exhibiting symptoms of exhaustion the usual treatment of turning was speedily resorted to, and the feet brought down without difficulty. It was, however, found that after the thighs had passed, the delivery became slow and increasingly difficult, the abdomen suffering great compression on passing, and the thorax still more. The arms were extracted with much trouble, and an examination was then made as to the cause of the unusual impediment to delivery. This examination discovered the vertex of a full-sized head presenting immediately over the breast of the descending infant, and the anterior base of its neck could be traced in close apposition to the presenting head, the latter firmly impacted in the pelvic cavity. The narrator of the case immediately perceived that it was "a case of twins, in which both ova had been ruptured, and the head of the second child had descended into the pelvis between the head and body of the one so nearly born."

Under these unusual circumstances three modes of expediting delivery occurred to the operator. 1. To push the head back. 2. To open it. 3. To truncate the extruded body. The first was impracticable; the second would sacrifice the only child for which there was any hope of life. The third appeared to offer the greatest safety to the mother, and the best chance of preserving the surviving child.

The separation was made about the seventh cervical vertebra, the neck was then pushed up and passed easily, the presenting head at the same time descending perceptibly. The forceps was then applied laterally, and delivery speedily effected. The child did not survive, but the mother made a lingering recovery.

Art. 120.—*On Placenta Prævia.* By Richard Doherty, M.D., Secretary to the Dublin Obstetrical Society.

(*Dublin Journal*, July 1846.)

[The mode in which placenta presentations are induced is thus described by Dr. Doherty:]

Placenta presentations are divisible into two classes, those in which merely a lobule of the placenta overlaps the os uteri, and those wherein the placental mass is wholly ingrafted on the cervix. In their origin, I apprehend, they are quite distinct. The former arises from the placenta when originally attached in a natural situation, as denoted by the insertion of the cord, growing irregularly, and thus extending a portion of its margin into the cervical region of the uterus, in which case it gives rise to, for the most part, merely a partial placental presentation; and this is the more usual form of the anomaly. But the occurrence of full placental presentation, where that substance springs from the whole area of the mouth of the womb, is, I believe, referrible to a deficiency in the decidua, which should naturally extend across the orifice of the Fallopian tube, and the absence, consequently, of the support which ordinarily it is thus enabled to give to the ovum as it enters the womb. I think that it must be evident to every reflecting mind that a wise provision is designedly made by Nature for the purpose of preventing the ovum from

falling towards the os, and there taking up its residence. The decidua reflexa, a membrane which, be it remembered, does not exist in quadrupeds, in which no such danger would arise, must have the effect of maintaining it at the upper part of the uterus. But if the decidua be imperfect, or the ovum descend into its cavity before that membrane has acquired sufficient consistence and tenacity to resist its weight, the ovum must, I conceive, make its way to the neck of the womb, and give rise to an implantation of the placenta there. And this opinion is not a mere baseless supposition, unsupported by evidence, but is drawn from certain cases recorded for totally different purposes. Thus, in the instance related by Jee, of a young woman who poisoned herself in the second month of pregnancy, wherein he found (as, in his opinion, is invariably the case) the Fallopian tubes pervious, the ovum had taken up its position at the os, and was forming its placenta there (Medico-Chirurgical Transactions, vol. xvii, p. 493); and Sir Everard Home (Philosophical Transactions, 1817, part ii, p. 252) details the case of a female pregnant eight days (a period far shorter than that which the product of the ovary usually takes to arrive at the womb), in whom a small ovum was detected near the cervix uteri, in the midst of long filaments of coagulable lymph; in her the os was completely closed, but the orifices of the superior angles of the uterus were uncovered by decidua.

As to the mode in which hemorrhage is produced, when the placenta occupies the lower segment of the womb, an ingenious theory has lately been broached by M. Gendrin, in his 'Philosophical Treatise on Practical Medicine,' a work characterized in general by sound and comprehensive doctrines based on the experience afforded by the wards of La Pitié. The view which he has announced is, that the placenta grows, not by extending its edges, but by increasing its centre, according as room is made for it by the enlargement of the womb, its margin never making any advance; and that the rupture of vessels, which produces the flooding, is caused in placental presentations, not by the expansion of the lower segment of the uterus exceeding the accretion of the placenta, and so tearing up its attachments, as is now believed, but, on the contrary, by the neck of the womb being unable to make progress equal to the rapid development, during the latter months of pregnancy, of the organ implanted on it; he believes, in fact, that the bleeding in placental cases is from ruptures in or exudations from the placenta, and not from denudations of the uterine sinuses. But, in the first place, that the hemorrhage issues from the womb, and not from the placenta, is evinced by the child being sometimes born alive in these instances, and by a case given by Ingleby, in which the practitioner cut away a part of the placenta which obstructed the mouth of the womb, and yet no discharge of blood escaped from the surface. (Lancet, vol. i, 1839-40, p. 943.) Secondly, if the growth of the placenta were by addition to its centre alone, and not by extension of its edges, it should, I conceive, always maintain a strictly circular form, and yet we know how frequently it presents inequalities and irregularites in its circumference, "the edges of it terminating in a broken manner, forming somewhat like the lines of a very irregular island on a map." (Essay on Uterine Hemorrhage, by Edward Rigby, p. 140; Norwich, 1822.) And, thirdly, the supposition that the hemorrhage is caused by the placenta outgrowing the uterus, is

at variance with the fact that in some cases of *full* placental presentation bleeding does not exist during the development of these organs, but arises for the first time only when labour sets in. The possibility of an occurrence so contrary to general experience, has not escaped the notice of Dr. Rigby, jun. In giving an example in which the placenta was centrically placed, and yet there was no gush of blood until the patient had gone her full time, he asks, "are not those hemorrhages from placenta prævia, which make their appearance in the seventh and eighth month of pregnancy, generally connected with a partial attachment of the placenta to the os uteri; and, on the other hand, when it is centrically attached, does not the patient usually go to the full term of gestation before any hemorrhage takes place?" (Lond. Med. Gazette, vol. xiv, 1833-34, p. 368.) I am now in a position to answer these questions. I have been engaged in examining the records of cases of this description, and although in many the distinction is not sufficiently drawn between a partial and a full presentation, nor the period of the first occurrence of hemorrhage defined, to make them available for our present purpose, I have collected a sufficient number, of which the details are accurately given, to prove that where there is merely a bit of the placenta overhanging the os, the woman scarcely ever goes beyond the seventh or eighth month without an alarming discharge of blood; while, on the other hand, although with a full implantation, hemorrhage, in the greater number of instances, bursts forth at intervals during the latter months, it is not a very unusual circumstance to find such patients proceed without any sanguineous loss till their term is completed; and I should explain the difference in this way; when the placenta springs from the cervix, or, as in one patient, although originally commenced on one of the walls of the uterus, as indicated by the root of the cord, it enlarges to such a magnitude as to cover completely the neck also, its growth has been sufficiently concentrated or extensive to keep pace with the circular expansion then progressing in the inferior chamber of the womb; whereas, when the substance, being at first elsewhere affixed, does not exceed its usual proportions, but is merely developed so irregularly as to advance a portion of its margin over that part, its growth is expended in other directions, and it becomes unable to adjust itself to the daily increasing size of the region into which it has, as it were, strayed.

Art. 121.—*Cæsarean Operation. Case reported by* Mr. Aitken.

(*Lancet*, June 13, 1846.)

[The following case occurred in the Lying-in-Hospital of Vienna. A female, aged 38, of short stature, and in poor circumstances, was discovered by Dr. Bright, the assistant-accoucheur to have a deformed pelvis, the brim being greatly contracted. The membranes had ruptured, and the os uteri was dilated to the size of a shilling. She had previously been roughly treated by a barber-surgeon. As the pains became stronger, and the deformity was considered to be serious, Dr. Kleine, the midwifery professor, was consulted. An exploration convinced this physician that delivery could not take place in the natural way, and he therefore had the option of embryotomy or the Cæsarean operation. As the

child was alive, and presented the breech, he decided upon the latter operation, which was accordingly performed as follows :]

The patient was placed upon a table in the recumbent posture, with the shoulders a little elevated. The bladder was emptied, and the legs and thighs were so placed as to relax the abdominal muscles. An incision was commenced on the left side of the linea alba even with the umbilicus, and was carried downwards to within one inch of the symphysis pubis, the integuments only being divided. A second incision divided the left rectus abdominalis, and exposed the peritoneum. This was carefully divided, and the uterus became visible, and was seen to be of a reddish-blue colour, and to extend an inch and a half above the umbilicus.

An incision into the organ was commenced at its fundus, and continued to within two inches and a half of the symphysis pubis. Upon completing the incision, the child was seen enveloped in the amniotic membranes, and lying in the first oblique breech-position.

There was very little bleeding. The professor grasped the feet of the child, and gently extracted them, the lips of the wound being kept apart by an assistant. As the breech was passing through, a violent labour pain came on, and obliged the professor to discontinue his efforts until the uterus relaxed, when he was able to complete the extraction, not without a slight rupture of the uterus taking place as the head passed the incision. From this torn portion so much hemorrhage occurred that the patient fainted. After she was restored the placenta was removed, and the cord being divided, the child was given to the nurse.

Five sutures were then passed through the rectus, integuments, and peritoneum, and the wound was dressed with strappings of plaster. The operation lasted one hour and a half. She was then put to bed, and took half a grain of opium. On the evening of the next day she began to complain of thirst, the skin became hot, and the pulse accelerated, peritonitis ensued, from which she sank.

[The reporter of the above case does not consider the deformity to have been so great as to warrant the Cæsarean operation, according to the notions of British practitioners, but he thinks that under the circumstances—the fear of rupture of the uterus, the child being alive, and puerperal fever raging at the time,—the professor acted with judgment.]

ART. 122.—*Treatment of Pruritus Vulvæ.*—Dr. Mitchell remarks, that when pruritus of the female genital organs proceeds from inflammation of the mucous membrane covering the vulva, there are frequently other symptoms added; for instance, the patient will complain that in walking there is a sensation of bearing down, considerable pain in the back, and leucorrhœal discharge; the pain is frequently referred to the last bone of the sacrum, and she cannot sit long in one position, but is compelled to move from one ischium to the other. If a married woman, pain will also be felt in coitu; this, at first trifling, becomes eventually so intense as not to be tolerated. If an examination of the parts be made, they will present a fuller and redder appearance than natural; the introduction of the finger into the vagina is accompanied with severe pain until

it pass the sphincter vaginæ, which is very frequently much contracted; no pain is felt on pressure upon the uterus, nor passage above the sphincter. If a careful examination of the parts external to the sphincter be made, small eminences and depressions may sometimes be detected; these are the mucous follicles inflamed and indurated. Dr. Mitchell states that he has seen them sometimes as large as a swan-shot, and exquisitely sensitive; small aphthous ulcers are also very common.

It is a matter of importance in these cases to ascertain whether there may not be some disease going on at the neck of the uterus, as many of the symptoms now enumerated belong also to several uterine affections. As a precautionary means, therefore, the employment of the speculum is advisable in every instance where it is not contraindicated.

The treatment that he has found most useful for the vulvular inflammation has been the frequent use of the hip-bath and poppy-head stupes, until the more urgent symptoms of inflammation have subsided. The irritation and itching has been best allayed by the application, three or four times a day, of a solution of nitrate of silver in the proportion of a drachm to the ounce of distilled water. In some cases he has found benefit by alternating the caustic solution with tincture of matico, applied in the same way, viz. by a small piece of sponge tied on the end of a stick, or with a camel's hair pencil.

Benefit is also derived from the internal exhibition of mild saline purgatives, rest, and sea-bathing; it will frequently, however, occur, that after almost all our remedies have failed, and that the disease has been of considerable standing, that the administration of alterative doses of mercury will effect a cure, although not the slightest trace of syphilis be present. The preparation preferred by Dr. Mitchell is the Plummer's pill, five grains night and morning.

Dr. Mitchell has also seen much good effected by giving twenty-drop doses of Brandishe's alkaline solution in an ounce of any bitter infusion, such as gentian or quassia, two or three times a day. When the pain in the back is troublesome, being frequently more of a dull aching feel than acute pain, the application of the cautery to the sacrum affords very great, and in many cases instantaneous relief. To this method of treatment the author has before called the attention of the profession for uterine leucorrhœa in a paper read before the Surgical Society, and has since used it most extensively, not only in the above-named affection, but also for the one under consideration, and with very great success.

Besides the plan of treatment alluded to as having been adopted in this affection, it may be mentioned that the various soluble salts of lead, zinc, and mercury, narcotic preparations, borax, hydrocyanic acid, &c. have been used. With some practitioners the exhibition of balsam copaibæ, and the application of bread-crumb soaked with liquor plumbi diacetatis has proved useful, and in some cases effected a cure. Gelatine and bran-baths have been also much extolled.

The Dublin Med. Press, Oct. 7, 1846.

ART. 123.—*Treatment of Pruritus Ani et Vulvæ.*—M. Cazenave treats the above obstinate symptom by one or other of the following lotions:

1.	Subcarbonate of potass	ʒ ij-ʒiv.
	Distilled water	℥ xvj.
2.	Sulphuret of potass	ʒ j.
	Distilled water	℥ x.
3.	Cyanide of potassium	grs. ix.
	Distilled water	℥ viij.
4.	Bichloride of mercury	grs. iij-iv.
	Distllled water	℥ viij.

SECT. II. DISEASES OF CHILDREN.

ART. 124.—*Differential Diagnosis of Hypertrophy of the Brain and Chronic Hydrocephalus.*—M. Mauthnier (Diseases of the Brain and Spinal Marrow in Children) states the differences in the above diseases at great length. These differences are exhibited in the following tabular form by his reviewer.

Hypertrophy of the Brain.	*Chronic Hydrocephalus.*
1. The posterior part of the skull first presents an unnatural prominence.	1. The forehead is the first part to present an unnatural prominence; the altered direction of the eyes, and the great width of the sutures, are also characteristic.
2. Children lie horizontally, or throw the head back.	2. Children lie on the belly, with the head lower than the body, and buried in the pillow.
3. Face puffy, eyes inexpressive or staring, mouth half open.	3. Countenance etiolated, with an expression of premature old age.
4. Functional disturbance comes on gradually—not before the period of dentition or weaning, and consists, at first, in affection of the respiratory apparatus.	4. Functional disturbance begins early, and involves the cerebrum from the beginning.
5. Patient fat, and leuco-phlegmatic.	5. Patient ill-nourished, subject to rickets and tabes.

British and Foreign Med. Rev. April 1846, p. 389.

ART. 125.—*On the Treatment of Syphilis in Infants.*—Sir B. Brodie's remarks upon this subject are as follows:—"Children are sometimes born with syphilis, the father or mother having been affected with it. The child looks thin, and is of small size, and instead of thriving becomes thinner and thinner. At the end of three weeks it is covered with a red scaly eruption, with aphthæ about the mouth, and chaps on the lips and anus. I have tried various methods of treating these cases. I have given the gray powder internally to the child, or some kind of mercury to the nurse. But the mercury given to the infant gripes and purges severely;

that given to the nurse cannot be depended upon, and, at all events, is an unjustifiable practice. The mode in which I have treated these cases, for some time past, is this: I have a flannel roller provided, at one end of which I spread some mercurial ointment, say a drachm, or more; and I apply the roller, thus prepared, not very tightly round the knee, repeating the application daily. The motion of the child produces the necessary friction, and, the cuticle being thin, the mercury easily enters the system. This causes neither griping nor purging; it does not even cause soreness of the gums, but it cures the disease. Very few children ultimately recover in whom the mercury is given internally, but I have not seen a single case in which this other method of treatment has failed.

Lectures Illustrative of Various Subjects, &c. p. 245.

ART. 126.—*Treatment of Umbilical Hernia.*—The 'Gazette des Hôpitaux' contains some observations by M. Meynier, in which he recommends the application of strips of plaster over the hernial opening, and condemns the use of cork, or other projecting substance. The editor of the 'Medical Gazette,' in commenting upon this suggestion, which, as he remarks, has no claims to novelty, speaks favorably of a circular pad of amadou, spread with adhesive plaster, and kept in its place by a larger circular plaster spread on white leather.

Medical Gazette, Oct. 9, 1846.

ART. 127.—*Clinical Lecture on Diarrhœa of Infants.* By Prof. TROUSSEAU.

(*Medical Times*, May 23.)

The influence of the change of seasons is very strongly felt in hospitals destined for the reception of infants. During the course of the winter a numerous series of pulmonary and cephalic disorders have passed before us; we are entering now into spring, and the coming heat will bring with it intestinal affections. Soon, perhaps, we shall not in one month meet in these wards with a single case of pneumonia, twelve or fifteen cases of which were admitted during every month of the winter. Thoracic diseases will be replaced by abdominal symptoms, and amongst these diarrhœa being the most frequent, the most difficult to treat properly, and the least understood, we will endeavour to prepare you beforehand for its observation by some remarks upon its pathology and treatment. The subject is extremely difficult, and although I have for eight years devoted myself to a daily study of the maladies of infancy, I feel myself in the dark with regard to many of its details, and do not therefore pretend to give you a completely satisfactory description, but merely to impart the little I do know of the matter. In order to introduce some regularity in the following remarks, we deem it necessary to establish a practical division between the various sorts of diarrhœa which are observed in children. We acknowledge only four primary forms of diarrhœa: 1, bilious diarrhœa; 2, mucous diarrhœa; 3, lienteric diarrhœa; and 4, choleriform diarrhœa, or cholera infantilis. These forms are perfectly distinct from each other, and all the varieties of diarrhœa which may be observed in children, and which do not seem at first to have a place in our classifica-

tion, will be found to consist of combinations of several of these original forms, or of deviations from these elementary types.

Causes.—Bilious diarrhœa may consist in a simple increase of the biliary and pancreatic secretions, or in a perversion of their qualities. Both may result from local irritation, but the first is often produced by mere physiological excitement. We find a double illustration of these pathogenic influences in the abundant flow of saliva determined by stimulation of the mouth with mercury, and in the increase of the secretion of tears caused by sorrow. Thus, slight inflammation of the stomach or duodenum will occasion a discharge of bile into the intestine; thus fear, anger, nervous excitement, in a word, will also produce an increase of the biliary, pancreatic, and sometimes the renal secretions. We meet with daily examples of the great power of physiological stimuli on the conglomerated glands. The diarrhœa of the young soldier who goes into action for the first time is another common instance of the same kind, a further illustration of which we find in the influence of dreams on the spermatic organs. Violent exercise, abundant perspiration in many persons bring on diarrhœa. In the water-cure, a method of treatment too advantageous in some diseases to be entirely left to quacks, we find that during the process of packing, if the patient is made to drink several tumblers of water, abundant perspiration is thrown out, but if diaphoresis does not appear, the mucous surface of the intestine substitutes its action to that of the skin, and relieves the system by diarrhœa. One of the most frequent causes of diarrhœa will be found to reside in the quality of food. The presence of globules of colostrum in the nurse's milk, due, as Donné has proved, to latent irritation of the mamma, sudden weaning, the exhibition of improper food, are all circumstances by which diarrhœa may be occasioned in the infant. The habit of covering the child in bed with too warm clothing is also a frequent cause of disease. This is unfortunately a habit very prevalent amongst the lower classes in this country. So many as four blankets are thrown over the child, who is besides enveloped in swaddling clothes; and to add to the child's comfort, the mother not unfrequently adds her pillow to his other clothing. Abundant perspiration is thus produced, and, without any regard for the consequences, the child is extracted from his bed to be suckled or cleaned, thus being exposed several times a day to sudden changes of temperature, the result of which is pulmonary disease in winter, and intestinal derangement in summer.

Semeiology.—Bilious diarrhœa generally follows slight feverishness, and is often preceded or accompanied by vomiting. The mouth is bitter, the tongue foul, and the appetite absent. The colour of the motion varies from yellow to green, according as the biliary secretion is changed in its quality, or only increased in quantity. Its duration is from three to six days, and its termination favorable, unless the case is mismanaged. It is in fact a slight catarrhal condition of the mucous surface. Mucous diarrhœa is marked by the discharge of a new secretion from the bowels; it is often the consequence of the first variety of disease, or of indigestion. The nutriment acts as a foreign body upon the intestine, producing local irritation, and the excretion of a slimy mucus. This is a very common, and fortunately not very dangerous form. But when the irritation of the digestive tube is carried beyond certain limits, matters take a more serious

aspect; enteritis sets in, and the products of inflammation are passed with the motions. Colitis occasionally makes its appearance, attended with intense pain, betrayed by cries uttered two or three minutes before the motions, with which a small quantity of blood is sometimes mixed, the dejections assuming a dysenteric character. When the small intestine alone is inflamed, our third form of diarrhœa, lientery, appears. In this variety the food passes unaltered through the digestive organs, and is recognizable in the dejections, in which grains of rice, vegetable substances, curdled milk, &c. can be readily distinguished. This is an extremely dangerous derangement, on account of the impossibility of refection.

After one of the above kinds of diarrhœa, occasionally without them, the cholera of children—that almost invariably fatal affection—is observed to show itself. After dejections of a bilious or mucous character, the infant is suddenly seized with violent vomiting, against which the efforts of art remain unavailable. A watery diarrhœa of a greenish hue is at the same time discharged from the bowels, and alarming general symptoms are noticed. The eyes sink in the orbits, the features are discomposed, the complexion becomes livid, and the nose, tongue, extremities, and even the breath, grow cold; the cry is acute, small, and incessant; the skin loses its elasticity, and when pinched in any part of the body, retains the folds made by the fingers, as if it were become an inert membrane. The child is sleepless, but without convulsions. Such are the first symptoms of this formidable malady. In its second period the vomiting, and sometimes the diarrhœa, cease, but no amendment follows. The collapse increases, and the infant almost invariably dies. We have, however, occasionally had the consolation of saving some few cases; one is at present in the wards, to whose case we called your attention, and who owes his recovery, to the double tartrate of soda and potass.

Treatment of bilious diarrhœa.—We have found few drugs of any avail in the treatment of the bilious diarrhœa in children. It is a convenient plan to call the malady a gastro-enteritis, because the denomination leads to an invariable line of treatment, accessible to understandings of the meanest capacity. We take, however, a different view of diagnosis generally, and deem it unprofitable unless it leads to some practically useful indication. Some forms of diarrhœa are doubtless less difficult of cure than others, but we must say that the varieties we have described often combine with each other, so as to cause the practitioner no small embarrassment, and to reduce him, in many cases, to a blindfold empiricism; not but that we profess much respect for that empiricism which teaches us to exhibit mercury in syphilis, steel in anemia, and bark in ague; but the empiricism we deprecate as a contemptible method is that which is not guided by diagnosis. The method we refer to may become a useful guide to the detection of the nature of disease, and it then acquires a considerable degree of utility. Let us remind you of a case of hemicrania at present in the wards. The attacks were periodical, and we tried sulphate of quinine without success; thus acquiring the knowledge that it was not governed by miasmatic influence. We exhibited then mercurial preparations, and the nervous headache having yielded at once, we were led to attribute the disease to syphilis. This is the empirical method we adopt; it is not the empiricism of *experiment*, but of *experience*. Thus, if we say that a patient is affected with neuralgia, we express a diagnostic opinion which

is as elementary, and, let us add, as useless, as to say that he is affected with a corn on his foot; but it is quite another sort of thing to say that the patient is labouring under gouty, syphilitic, miasmatic, rheumatic, or chlorotic neuralgia, because this kind of diagnosis leads us to the real therapeutic indications. To return to the treatment of diarrhœa. Let us not forget that, to arrest the superabundant intestinal secretion is not by any means to cure the complaint which caused it. It is our opinion that bilious diarrhœa is only a very superficial catarrhal derangement of the intestine. The most efficient treatment consists in the exhibition of neutral salts, such as the double tartrate of potass and soda, phosphate of soda, Epsom or Glauber salts. We do not wish you to understand that we recommend the use of purgatives. No; castor oil and magnesia, or manna, you will usually find unsuccessful, whereas the neutral salts generally produce a speedy amendment. We have also derived benefit from the exhibition of the pulv. ipecac., at doses varying from two to ten grains, and mixed with a little jam, milk, or simple syrup. The action of this medicine is threefold: it is a substitutive, a discutient, and being a diaphoretic deviates towards the skin those vital energies which are occupied in the production of morbid symptoms in the alimentary canal. But when the bilious diarrhœa is the consequence of mere nervous excitement—when it is caused by fear or anger, as tears by grief, or salivation by appetite—opium gives relief in a very short time. In these cases, which you will find to be characterized by the absence of any sort of suffering during the first twenty-four or thirty-six hours, the disease will speedily yield to the influence of hypnotic medicines. Half a drop of Sydenham's laudanum is a sufficient dose for a child under six months; others, it is true, will bear two or three drops, but that dose is too powerful a narcotic for the many. The laudanum should be dissolved in an ounce mixture, whereof the infant shall take a spoonful every three or four hours; but when the disorder has lasted beyond the specified time, opium ceases to possess its salutary effect, because the mere presence of the increased secretions on the mucous surface has sufficed to bring on an irritation which did not exist at first. Then we must again have recourse to neutral salts.

Treatment of mucous diarrhœa.—When the motions of the infant contain a certain quantity of glairy matter, inflammation of the intestinal mucous coating may be pronounced to exist. If the motions are greenish, and contain curdled milk, the small intestines are concerned; on the contrary, colitis will be recognized by pain during defecation by the yellow colour of the stools, occasionally tinged with blood. In these forms of diarrhœa, ipecacuanha can be exhibited once or twice with confidence, and should be followed up with saline purgatives—sulphate of soda, for instance, one to three drachms, or the double tartrate of potass and soda. In severe cases, the medicines should be continued two days in succession; if colitis accompany diarrhœa, it is necessary to act locally upon the large intestine, and this we do effectually by the injection of medicated enemata—an injection containing one or two grains of nitrate of silver to eight ounces of liquid, and ten ounces for a child over two years, should be used. A smaller quantity of fluid should not be placed in contact with the surface of the colon: and in order to ensure the proper action of the injection, the intestine should first be cleared out

with a lavement of common water. But the solution will not penetrate, or will be rejected on account of the cries or efforts of the infant, unless peculiar precautions be taken; a caoutchouc tube, long enough to penetrate beyond the sphincter ani, should be adapted to the syringe, and the nates should be tightly compressed with the hand; these details may appear futile, but you will find them of great practical importance; and they should not be treated with disdain, because on these apparently unimportant precautions may rest the cure or loss of your patient. In mild cases, one injection a day, for three or four days, will be sufficient; in severe cases it should be repeated twice in twenty-four hours. Sulphate of zinc or of copper, the ammonide of copper, may be also used with success; but the nitrate of silver is more generally useful. Should colic and tenesmus, indicative of colitis, or colic with borborygmi, symptomatic of enteritis, be present, half a drop of laudanum given in the drink, in the second case, or two drops injected into the rectum, in the first, should be exhibited, in order to remove pain. When the disease has lasted some days, astringents may be prescribed with advantage. We place most confidence in the extracts of monœsia, two to four grains in a mixture; or of rhatany, five to eight grains.

Treatment of lienteric diarrhœa.—We have said that lientery consists in the passage of undigested food with the motions; perhaps the microscope would prove that this condition is more frequent than is generally supposed. However this may be, the little patient grows thinner, but without the presence of febrile excitement. Under such circumstances the conduct of the practitioner is exceedingly difficult, because, in the first place, the disease may be connected with an inflammation of the intestines, producing a morbid exaggeration of the peristaltic contractions, and because, in the second, we may have to cope only with a perversion of functions induced by debility; thus the symptoms may result from two very opposite conditions of the system, difficult to distinguish from each other, and each indicating a contrary line of treatment. Let us add also that it not unfrequently occurs in consequence of the derangement of some other viscus, that the intestines become inapt to accomplish their functions, and become inflamed secondarily from the presence of irritating matter on their mucous surface. Thus the duodenum bears, without morbid excitement, the passage of chyme, but inflames when unaltered food is forced into it by the stomach. Thus also enteritis and colitis may result from lientery, originating at first in weakness. Contrary to what is observed during health, the motions of lienteric subjects are acid—a circumstance which may perhaps account for the salutary influence of alkaline medicines, by which the biliary and pancreatic secretions may be, to a certain extent, replaced. I have found three substances of this nature particularly beneficial; these are, magnesia, in small doses, from one to five grains daily; lime water, one scruple to one drachm; and the bicarbonate of soda, two to eight grains.

The change in the composition of the blood, occasionally a primary, but more frequently a secondary alteration, must be remedied by appropriate means. The most efficient of all medicines for this purpose is, in my opinion, common salt, in doses varying from five grains to one drachm daily; be cautious, however, how you prescribe this

substance in private practice. The absurdity of the public in these matters is such that the prescription would most probably be treated with contempt; but if you order the mineral waters of Hombourg, Kissingen, or Niederbrunnen, in which the salt is really the active element, the therapeutic action will be exactly the same, and you will preserve the confidence of your patients, which a more candid prescription would most probably have deprived you of. Mineral baths, containing from two to six ounces of sulphate of iron, sulphureous or aromatic baths, with decoctions of sage, lavender, and rosemary, a pint of red wine and common salt, you will also find very effective. Above all, let the child enjoy the benefit of good air, and let him be taken into the sun. The food most appropriate to infancy is milk, a small quantity of which must be taken. Should colitis be present, it will be removed by enemata, containing a few grains of sulphate of zinc or nitrate of silver, and to remove pain, a half a drop of laudanum will suffice.

Treatment of choleriform diarrhœa.—The indications of treatment are here very much the same as in the cold stage of Asiatic cholera, and the efforts of the physician should be employed rather to modify the deeply affected nervous system, than to suppress the increased intestinal secretions. Revulsion must be established on the skin by rubefacient applications, and at the same time the circulation should be roused by the exhibition of internal stimulants. Mustard poultices should be applied to all parts of the body in succession; mustard meal should be placed between two cloths, and left only ten minutes in contact with each region. The sinapisms should be continued until a proper degree of heat has been restored to the surface. Internally the use of ammonia, as a stimulant, is not generally followed with success; the evident state of alteration of the blood in this form of disease leads us to prescribe the use of alkalies, the defibrinating influence of which is a fact admitted by every one. Alcoholic stimuli are better suited to the treatment, but ether, and the distilled waters obtained from the various families of the labiatæ, chiefly mint, and melissa (balm), are remarkably useful, probably in virtue of the quantity of camphor and essential oil they contain. The infant should take a teaspoonful of the distilled water every half hour at least, until the skin warms, the breath acquires a natural temperature, and the pulse is perceptible. This being obtained, the nervous system has been called into action, and should be left undisturbed to re-establish the equilibrium.

Ipecacuanha, both as a diaphoretic and a substitutive, is also useful, but should not be given before the reaction has fairly set in. When by this treatment the progress of the disorder has been checked, the disease returns to one of the other forms of enteritis, the treatment of which we have already described. Even in choleriform diarrhœa, infants should not be kept in a state of complete abstinence; they should be fed with milk and water, containing occasionally the subnitrate of bismuth, prepared chalk, or the carbonate of lime; water containing fecula, with a little egg-flip, is also a convenient article of food, and if the child rejects it at first, he will afterwards keep it down, if an extremely small quantity of laudanum be added, as a sort of "passport" to the pylorus.

The *prognosis* of the various forms of diarrhœa we have enumerated is extremely serious for the very young infant and for the recently weaned child, but is less so when the child is still at the breast. You must not, therefore, deprive your little patient of his nurse, although pure milk may be too solid for his deranged stomach, because it is not impossible to change its qualities. Observe the nature of the lacteal secretion in a healthy nurse. When the breast is pressed with the hand, an opaline, semitransparent fluid issues, containing few, if any, butyraccous particles; but when the child has sucked for three or four minutes, the milk rises, according to the popular expression, i. e., a peculiar sensation is experienced by the nurse, and a spontaneous and abundant secretion of fatty matter takes place; the milk is then perfect, white, opaque, and highly nutritious. Allow the child to take the breast only for three or four minutes, therefore, until the milk rises, and you give him a light food, well-appropriated to his sickly condition.

If the infant has been recently weaned, his nurse should be given to him again. Some children will take the breast after having been deprived of it for six weeks; but almost all will resume it if they have been weaned only a week. If the same nurse cannot be procured, another should be tried, and the child should be given to her in the dark, because he would probably refuse the breast were he not to recognize his own nurse. At any rate, the drinks should not he given with spoon or cup; the little patient would soon refuse any more troublesome method of assuaging thirst; but he should be made to suck his drink from a twisted rag; and his drink should be made less sweet and palatable than the nurse's milk, to which he will soon, with these precautions, return with pleasure.

Art. 128.—*Treatment of Infantile Dysentery.*—[The reviewer of Mr. Coley's work on the Diseases of Children, thus condenses the author's remarks upon the above subject.] When this is in the acute inflammatory form leeches to the abdomen and a saline aperient are indicated. The sulphate of magnesia forms the best aperient. It may be given in doses of from ten grains for an infant, to half a drachm for a child of three or four years old until the pain and purging subside. Opium and astringents are hurtful here; but tenesmus may be relieved by warm water enemata, or immersion in the hip-bath. A few drops of tincture of gentian may in this case be added to the saline aperient. The *congestive* form of the disease, in which the vital powers are eminently collapsed, is one of great danger. The heat of surface and the circulation must be restored by blankets, hot flannels, warm baths, and repeated small doses of opium and calomel. A generous diet and stimuli must also be resorted to, and if the tenesmus is severe, an opiate injection should be given. As soon as reaction is restored a few grains of rhubarb and magnesia may be given every few hours; and when the heat of the skin becomes anormal, and there is discharge of blood and pain, small local depletions may be resorted to. For *chronic* remittent and intermittent dysentery, the small doses of sulphate of magnesia given three times a day suffice to effect a cure.

Med.-Chirurg. Rev. Oct. 1846.

Art. 129.—*Treatment of Ascarides.*—M. Schultz employs enemata of infusion of quassia with great success for the expulsion of ascarides —the strength employed is ʒj to an ounce.

Gaz. des Hôpitaux, 26 Sept. 1846.

Art. 130.—*Eneuresis.*—Incontinence of urine in children has been observed by Dr. Berenguier to have some connexion with intermittent fever, being apparently a symptom of the debility which accompanies the characteristic anæmia of malarious districts. The most appropriate treatment was found to be a combination of copaiba, laudanum, and the protoxide of iron made into pills.

Journ. für Kinderkrankheiten, and *Dubl. Quart. Journ.* May 1846.

In the same disease belladonna has been used successfully by Dr. Moraud, in the dose of one-fifth of a grain of the extract taken twice a day, and increased at the end of a week, if no effect be produced.

Annuaire de Thérapeutique, 1846.

REPORTS

ON THE

PROGRESS OF THE MEDICAL SCIENCES,

July—December 1846.

The intention of the following Reports is to pass in review the principal additions to each department of Medical Science, which have been placed on record during the preceding six months. It is not contemplated that they should be confined exclusively to the notice of what is new; any fact or doctrine which may be considered practically useful, will, although not strictly novel, be regarded as worthy of commemoration. It must be obvious to all who are aware of the immense mass of information which is almost daily put forth by the medical press of this and other countries, that the notice of every subject would be an impossibility. It therefore devolves upon the writers of each Report, to select only such articles for retrospection as may possess superior recommendations, either of an intrinsic character, or in relation to the main end and aim of all medical knowledge—the alleviation of suffering and disease.

I.

REPORT ON THE PROGRESS OF PRACTICAL MEDICINE, PATHOLOGY, AND THERAPEUTICS.

BY THE EDITOR.

[The figures in brackets refer to the corresponding Articles in the Abstract.]

PART I. GENERAL PATHOLOGY.

1. Of the works strictly relating to the subject of general pathology, which have issued from the press subsequently to the date of our last Report, we have only two to notice in our own language, namely, a translation of Vogel's 'Pathological Anatomy,' by Dr. Day, and the 'Microscopic Anatomy of the Human Body,' by Mr. Hassal. In Germany a new work has been written by M. Günsburg, entitled 'Die Pathologische Geweblehre,' of which the first volume only has reached this country. In French literature we have to mention the completion of M. Bouillaud's 'Traité de Nosographie Médicale,' in five large volumes.

Of the value of Vogel's labours in general pathology it is scarcely necessary to speak, as their importance and accuracy have been acknowledged in various reviews of the original work. We have only to add that the translation of Dr. Day is at once fluent and faithful, and that its usefulness is much increased by the addition of a judicious selection of notes, derived from the editor's extensive reading, as well as from the author's other works.

In our further notice of this volume, we shall give a rapid analysis of its contents and method of arrangement, postponing a more minute mention of individual subjects to those particular sections of this Report, to which they may with propriety be referred.

The volume commences with an introductory chapter, in which the just claims of pathological anatomy are clearly set forth, and its importance as the basis of therapeutic inquiry insisted upon. In Chapter I is contained the investigation of the abnormal development of gas in the human body; which the author considers according as the gaseous product is the result of atmospheric pressure, as in emphysema, or of putrefactive fermentation, as in flatulence and tympanites. The secretion of gas by the tissues is looked upon as a doubtful occurrence.

In Chapter II, we have a description of abnormal collections of fluids, or dropsies, in which certain divisions are introduced, based upon the chemical composition of the effused fluid. Thus we have, 1, *serous* dropsy, in which the fluid resembles the serum of the blood; 2, *fibrinous* dropsy, in which the fluid holds fibrin in solution; and, 3, *false* or *spurious* dropsy, in which the fluid differs essentially from either of the preceding forms.

1st. *Serous dropsy.* Passing over the chemical relations of this form of dropsy, we shall proceed to mention briefly the author's account of its causes, diagnosis, &c. Serous dropsy is believed always to proceed from the venous system, and to take place whenever the balance between the specific gravity of the blood and the porosity of the venous parietes is lost. This occurs when a vein is compressed; when the flow of its contents is obstructed, as in disease of the heart, or in disturbance of innervation; and, on the other hand, in cases in which the blood itself is attenuated, as by repeated venesection, retention of aqueous secretions, &c.

The fluid of serous dropsy is distinguished from the other forms by its behaviour under heat and nitric acid, by its containing no essential corpuscles, and by its non-spontaneous coagulability.

2d. *Fibrinous dropsy*, containing the plasma of the blood, is thought by Vogel to have been seldom described, nor sufficiently distinguished from the preceding. Like that the fluid is derived from the blood, but with this difference, that it is by permeation from the capillaries, and not from the veins. The subsequent conditions of fibrinous dropsy is, however, the point on which the most important distinction is to be founded. The serous form is either reabsorbed or remains unchanged for an indefinite time; fibrinous dropsical effusions, if not removed, undergo certain spontaneous transformations. These are chiefly coagulations, and the development of organic formations. The cause of the coagulations is not considered as explicable by Vogel, but he supposes it to be chemical. Organization occurs at the expense of the fibrin, and the products are as different as the tissues of the body, in the one case, or as the various abnormal products, pus, tubercle, cancer, &c., in the other. The process of organic development is very lucidly described; but for this, as well as other minute pathologico-physiological information, we must refer to the original.

3d. *False dropsies* are instances of retention of normal secretions, by obliteration of ducts, &c. Of this the fluid of the lachrymal sac may be cited as an example.

The pathological relations of the blood are considered by Vogel, in Chapter III, under two principal heads: changes in their physical properties, and changes in chemical constitution. He then notices changes in quantity, effusion of blood, and dissolution and imbibition of the hæmatine respectively.

The physical variations consist in deviation from the natural colour, changes in consistence and in coagulability, changes in odour and taste, and, lastly, changes in the configuration of the corpuscles.

The chemical relations of the blood in disease are treated of with that detail which their importance demands; but as the lengthened notice of this subject more properly belongs to our 'Reports on the Progress of Organic Chemistry,' by the editor of the present translation, we shall pass on to the author's next section—the changes in the quantity of the blood.

The quantity of the blood may be either increased or diminished, in the one case constituting plethora or hyperæmia, in the other anæmia. Either of these states may be general or local. In respect to the symptomatology of plethora, Vogel affirms that we have no means of determining whether the whole mass of blood is increased, as is maintained by Becquerel and Rodier, or the globules only, as is affirmed by Andral and Gavarret. The chapter concludes with the examination of the causes of extravasation of blood, the changes which the effused blood undergoes, and the infiltration of the tissues with *hæmatine*. On the latter point the author observes that the colour produced by imbibition of dissolved hæmatine should be carefully studied, as it is very often, especially in the interior of the large vessels, mistaken for inflammation. The distinction may be always defined by the microscope.

Chapters IV and V include the extensive subject of pathological epigeneses or formations, and therefore, as might be anticipated, are the principal chapters in the volume, of which, in fact, they form the main bulk. Our space will only admit of an enumeration of the different sections of which they are composed.

Pathological epigeneses are divided into two groups, the *organized* and the *unorganized;* between which there is a twofold distinction, a *morphologic* and a *genetic*. They may, further, be either fluid emulsions, to use the author's expression, which, like the blood, contain organized solid parts suspended in a liquid, or in other cases solid.

Fluid products.—The first of these is pus, which occurs under the aspects of true or genuine pus, and abnormal pus; each of those is most minutely considered, as is also the subject of suppuration in general, and metastatic abscesses.

The *solid pathological epigeneses* comprise not only the strictly morbid developments, but the results of the reparative process; the investigation of which, as it developes itself in the various tissues, occupies a considerable number of pages. The morbid growths, properly so called, are divided by the author into two great groups—1, the non-malignant tumours analogous to the normal elements of the body, both in composition and mode of development; and, 2, the heterological or malignant growths. The first group is further subdivided into eight sections, which may be thus enumerated:

1st. Group—Tumours, consisting principally of vascular tissue, such as aneurism by anastomosis, nævus.

2d. Tumours consisting principally of adipose tissue. These may undergo various modifications, in virtue of which they may assume the characters of general obesity, of fibrous tissue, or of encysted tumours.

3d. *Fibrous tumours*, in which fibre is the chief element. These may exhibit certain transformations; the principal of which are vascular tumours, fatty, cartilaginous, and osseous tumours, and malignant tumours.

4th. *Cartilaginous tumours.*

5th. *Osseous tumours.*

6th. *Melanotic tumours.*

7th. *Gelatinous tumours*—colloid.

8th. *Encysted tumours.* These are divided by the author into the true simple encysted tumour, and the compound cyst, or combination of the former with other varieties of tumour.

The second group, malignant heterologous tumours, comprises those which exhibit little or no vitality, such as the typhous product, scrofulous deposit and tubercle (the pseudo-plasmata), and those which exhibit a more highly organized character, such as the various forms of cancer. These different products will be elsewhere alluded to (see *infra*, Accidental Productions), and we shall therefore merely state, in reference to the first sub-group, that Vogel admits that not only is there little or no histological difference between scrofulous matter and tubercle, but that neither can these be satisfactorily distinguished from the typhous material.

The remainder of this chapter is occupied with the special relations of unorganized pathological formations, commencing with the various processes in virtue of which their excretion or deposition takes place, and proceeding with a recapitulation of their numerous varieties. We have—1. The consideration of the precipitates of *protein* compounds, with rules for their recognition. 2. Of *fats*, including, *a*, Cholesterine; *b*, Margarin and margaric acid; *c*, Olein. The other precipitates are those witnessed in the urinary secretions, including the various urinary calculi. The author then notices in turn salivary

concretions, gall-stones, intestinal concretions, and concretions in the cutaneous glands. Lastly, we have a description of the concretions which are occasionally met with in the parenchymatous structure of organs.

Chapter VI is occupied with various pathological changes in the physical properties of the tissues, such as—1. Changes in colour; 2. Changes in form and size; 3. Changes in consistence.

Chapter VII. Mutual combinations of morbid elementary changes. This chapter traces the connexion between venous hyperæmia and serous, and capillary hyperæmia and fibrinous exudation; and touches slightly upon the proper limitation of the term inflammation. Upon this point some valuable remarks appear in the translator's note.

In Chapter VIII, under the title *Independent organisms*, are considered the origin and varieties of parasites, with their influence upon the organ infested by them. In a future report we shall probably have occasion to draw largely upon this chapter.

Chapter IX. Congenital malformations.

Chapter X. Post-mortem changes.

[In concluding the above brief notice of Vogel's valuable work, we must not omit to state that it is enriched with several highly-executed plain and coloured engravings, which exhibit the various objects of histological inquiry in a style which we do not recollect ever to have seen surpassed.]

2. The 'Microscopic Anatomy' of Mr. Hassal, which appears in monthly parts, bids fair to be a work of great utility and convenience, as it gives the reader, in simple and intelligible terms, the information which for the most part was previously only to be found in a collected form in foreign publications. The first, second, and a portion of the third parts are taken up with the anatomical description of the blood in a state of health, and is therefore foreign to the present Report; we may, however, state that the different elementary component forms of that fluid are well described and faithfully illustrated by coloured engravings. The second portion of Part III comprises the pathology of the blood, which the author investigates under the following sections:

1st. *Pathology of the red corpuscles.*—This includes an increase in their number, plethora; and diminution, or anæmia. The author then notices briefly the effect of medicinal agents upon the red corpuscles.

2d. *Effect of disease on the white corpuscles.*—This subject has not, according to the author, received sufficient attention. They are observed to be increased in number in certain diseases, especially in those which are accompanied by suppuration and great exhaustion of the vital powers. The cause of the accumulation of these bodies is supposed by the author to be some defect in their assimilation; their formation going on at the same time without alteration.

3d. *Deficiency of fibrin in fevers.*—Some difference of opinion exists among pathological chemists as to the condition of the fibrin in fevers, but the correct opinion appears to be that in the commencement of the disease there is little or no difference in this constituent, but that it diminishes as the fever progresses, and in proportion to the *lowness* of the type. This is the view adopted by Mr. Hassal.

4th. *Increase of fibrin in inflammatory affections.*

5th. *Condition of the blood in hemorrhages.*—This varies according to the type of hemorrhage. In those which occur in the plethoric, the globules are in excess [according to Andral, &c.—Ed.]; in the passive hemorrhages, on the contrary, the fibrin is deficient; so that, as Mr. Hassal observes, in both forms the globules are in excess; in the first class absolutely, in the latter relatively so. While, however, says Mr. Hassal, it is this excess of the red

globules which probably determines the occurrence of hemorrhage, the degree of these losses of blood are modified by the amount of fibrin.

6th. *Decrease in the normal proportion of albumen.*—Dropsies are stated to be of two kinds: one depending upon organic disease of some important organ, the ultimate effect of which is to produce an impediment to the circulation, and, consequently, loss of balance between the resistance of the vascular walls and the specific gravity of their contents; and another which appears to be caused by some defect in the constitution of the blood. It is the latter form which it is common to attribute vaguely to impoverished blood. Mr. Hassal inquires what element of the blood it is, to the defect of which dropsy is to be attributed? It is not due to a deficiency of the globules, he argues, for in that case dropsy would be observed as a more frequent termination of chlorosis; neither is it from defect of fibrin, or we should see it more frequently in adynamic fevers. [Mr. Hassal overlooks the œdema of the ankles which is common in aggravated chlorosis.] It is to a deficiency of albumen, therefore, to which we are to look for the explanation. This is comparatively untrodden ground.

The author concludes his observations by the enunciation of some therapeutic considerations connected with the subject, and the results of Becquerel's and Rodier's investigations, of which we have already given a detailed account. (See Report on Chemistry, Abstract, Vol. I.)

Part IV comprises the microscopic characters of mucus and pus.

3. *Elementary Forms of Disease.*—In a series of 'Contributions to Pathology and Rational Medicine,' Dr. Hughes Bennett* has included a paper upon the elementary forms of disease, a proper knowledge of which is indispensably necessary to the comprehension and description of morbid action. He divides morbid products into seven elementary groups, based upon certain distinctions in their physical characters, of which the following is a slightly condensed account:

1st. *Molecules or granules.*—The term molecule is applied to exceedingly minute bodies, which, under the microscope, do not exhibit any determinate external circumference, or any definite centre. The particular appearance assumed by molecules is greatly modified by the power of the lens employed; a body which at 250 diameters appears molecular is seen to be distinctly granular at a power of 500 diameters.

Granules are bodies of variable but minute size, and are distinguished by a distinct external darker ring, the edge of which is abrupt. When transparent they refract light, so that they present a bright or a dark centre, according to the focal point. When large they appear as globules, as in milk, for instance. They are generally composed of stearine or elaine, and disappear when treated with potash or ether. Their nature is supposed by Dr. Bennett to be twofold, either cells in the progress of evolution, or the results of disintegration of tissues. He distinguishes the former variety of granule from the latter by the regularity of its border.

2d. *Cells or corpuscles.*—By this term is understood bodies composed of an external wall or vesicle which incloses various kinds of contents. These may be either granules, or consist of one or more included vesicles, then called *nuclei*, these again containing granules or nucleoli. Cells can only be properly examined by viewing them first uninfluenced, and then under the action of reagents. Acetic acid, for example, renders some albuminous membranes more transparent, and dissolves others entirely. When the acid is added to pus-cells, their external envelope is rendered very transparent, the nucleus at

* Monthly Journal of the Med. Sciences, Aug. 1846.

the same time becoming distinctly visible. Cells are also modified by the action of water, which causes them to swell by endosmosis. Syrup, on the contrary, causes them to shrivel up by exosmosis. Cells or corpuscles differ in size, shape, &c., by which we are enabled to recognize the species of morbid product to which they belong. Thus the corpuscles of pus, cancer, &c., are recognized.

As a general rule, the external cell-wall is composed of albumen, the nucleus of some kind of fat. This is demonstrated by the action of acetic acid on the former, and of ether and the alkalies on the latter.

3d. *Filaments or fibres* present a thread-like structure, and are composed of a series of molecules running in lines, or of minute cylinders having, when in focus, dark borders and transparent centres. These filaments sometimes run parallel, at others are interlaced, or disposed in bundles, and, as in colloid, inclosing intervening spaces of variable shape. Fibres are found in several morbid products, but especially in lymph, and fibrous and cancerous tumours. The doctrine of the cellular origin of fibres is, according to Dr. Bennett, erroneous.

4th. *Pigmentary matter.*—Black pigmentary matter is formed of black opaque molecules, which are sometimes congregated in irregular masses, at others enveloped in a distinct cellular wall. It is often found in healthy lungs, and exists in great quantities in the sputa of colliers. It is also contained in some specimens of lymph, tubercle, and cancer.

The chemical characters of the black pigment are not always the same. Thus, that which is found in the sputum and lungs of the miner is unaltered by boiling nitric acid, and has been shown to consist of free carbon. That which is found in tumours is entirely decolorized by boiling nitric acid, and it is probable, according to Dr. Bennett, that the colour in such cases depends upon sulphuret of iron derived from the blood.

5th. *Earthy matter* occurs in the form of irregular masses or granules, which may be known by their dark borders and highly refracting surface. They also usually dissolve with effervescence in muriatic acid. Earthy matter is found in many morbid products, especially in chronic exudations on serous surfaces, in old tubercle, and in cancer, in atheroma, calculi, &c.

6th. *Parasitic vegetations* are composed of elongated cells, so disposed as to form jointed tubes, which tubes are often terminated by oval bodies, supposed by some to be the sporules of the plant. Parasitic vegetations are, for the most part, found on the surface of the skin and mucous membrane. They are the characteristic element of porrigo favosa, and exist in the sputa of phthisis.

The above different elementary forms of disease are well illustrated in the original paper.

§ I.—*Zymotic Diseases.*

4. *Fever, Continued.*—The communications during the past six months upon the subject of fever have been few in number, and for the most part without interest. Those which we have not already mentioned among our extracts we shall now proceed to notice. It may be observed in the first place that Dr. M'Connell Reed has published a volume entitled 'Fever Physiologically Considered,' in which the essentiality of fever is denied, the author believing that there is in all cases some organ involved, from the derangement of which the peculiar features of the fever are derived. In accordance with these opinions, fever is considered under the several varieties of cerebral fever, gastric fever, pleuritic and pulmonary fever, rheumatic fever, glandular fever, &c. The enunciation

of such obsolete doctrines will, we trust, be a sufficient excuse with our readers for the brevity of our notice of Dr. Reed's volume.

5. *Local Origin of Fever.*—Among the many advantages which have been derived from the Government commission to inquire into the health of towns, not the least important is the accumulation of evidence in proof of the intimate connexion which exists between fever and the exhalations from decaying animal and vegetable matters. It may be that too great stress is laid upon the influence of these exhalations in the origination and propagation of fever; but it cannot be doubted, at least after the testimony of the commission, that putrid effluvia favour its development, and augment its malignity. If we admit that continued fever may be produced by the simple exposure to putrid miasms, it must of course be allowed that, unless with the co-operation of contagion, its influence may be strictly endemic, or at all events epidemic within very narrow limits. A remarkable instance of this kind is recorded by Dr. Christison,* which occurred under his own observation, in an isolated locality in Peebles. The wife of a farmer was the first person attacked with symptoms of low fever, and died at the end of three weeks. The husband, an old man of 70, was the second case; he also died. The third was the son, who was seized on the same day as the father. The fourth, which, like the first and second, proved fatal, occurred in the person of a female servant. These were the only fatal cases. Twelve or fourteen other persons, however, were subsequently attacked, but in a milder degree.

At the time of the commencement of this fever there were no other cases in the vicinity. Fifteen persons either lived entirely on the farm, or passed the greater part of the day there. Of these every one, without exception, was attacked. Three or four persons also, who only came accidentally and for a short time to the locality, were slightly indisposed with similar symptoms. In no case, however, was the disease propagated by contagion to individuals who had not visited the infected farm. Under these circumstances, it is not surprising that the attention of the authorities was directed to the investigation of the causes of the disease. The similarity of the symptoms in all the cases, the narrow limits of their occurrence, the rapidity of their development, the non-transmission of the disease to persons who had not visited the spot, were so many circumstances which are not usually met with in febrile epidemics. An air of mystery was thus thrown around the origin of the disease, which readily gave rise to a suspicion of poisoning. It was at this stage of the inquiry that Dr. Christison was consulted. The first surmise which presented itself to the mind of this physician was the possibility of the disease arising from the use of diseased meat; but this idea was negatived by the fact that no animal had died upon the farm, and moreover that diarrhœa was not one of the symptoms of the disease in question. The suspicion of poisoning by the ordinary poisons was likewise, upon inquiry, found to be untenable. The origin of the disease from general epidemic causes was rendered unlikely, by the difference of the disease, both in symptoms and mode of propagation, from the ordinary typhus. There remained, therefore, but one plausible supposition, namely, the existence of a local source of effluvia. This supposition was verified by an examination of the drains belonging to the house and farmyard, which were found to be choked with the ordure from three privies, as well as by the drainage from stables and pigsties, and which upon being opened gave rise to the most fetid effluvia, the stench of which was perceptible for a considerable distance.

6. *Epidemic Fever in Liverpool.*—This epidemic was alluded to in our last volume (p. 167), but as our want of space then prevented us from giving such

* Monthly Journal, July 1846.

an abstract of Dr. Watson's description as the value of the communication deserved, we here subjoin a more lengthened notice of it.

The usual features of this epidemic were generally the setting in of a rigor with small compressible pulse; in a certain proportion of cases reaction failed to establish itself, and these were of course fatal, being good examples of Dr. Armstrong's "extreme congestive form" of fever. This collapse lasted for hours, or even days. Reaction, when formed, did not always bear exact proportion in its intensity to the severity of the latent stage. 1st, The pulse was often not much raised, but usually jerky and easily compressed; 2dly, Muscular pains were frequent; 3dly, Sensibility of the surface was generally depressed, in some cases preternaturally excited, and continuing until convalescence; the order of regions in frequency, the sensibility of which was exalted, was the back part of the head, sides and back part of neck, shoulders, arms, and lastly, lower extremities; 4th, Tenderness of epigastrium and abdominal regions, most prevalent symptom of all; 5th, Fur of tongue, either white or brownish, or slaty colour, red tip and edge, or cracked and glazed centre; in certain cases, instead of fur, the tongue had a clean and pointed appearance; 6th, Tremor of tongue often observed; 7th, Lassitude; 8th, Restlessness universal, even amongst the healthy and unattacked; this disturbed repose at night, along with muscular pains of limbs, widened the outlined impress of the epidemic constitution; 9th, Low delirium general; 10th, Pupil often dilated; 11th, Countenance waxy-looking, especially observed in the fever wards, when contrasted side by side with true typhus and common continued fever; 12th, Deafness only observed in extreme cases; 13th, Cough frequent, denoting thoracic embarrassment; 14th, Bowels constipated or relaxed; the difference in this respect due to the fact of the difference of different localities as to sanitary condition; 14th, Urine not particularly observed.

Embarrassment of organs seemed strictly proportioned to duration of the latent or collapsed stage. The value of the rate, volume, &c., of the pulse as an index was much lost or masked. Dr. Watson alludes to the tendency of modern epidemics to assume characters of nervous depression, more especially in densely populated districts, and the prejudicial effects of mere routine antiphlogistic treatment without clear indications for it, as regards crisis and convalescence.

The essential symptoms of the fever are next discussed, as well as its contradistinction from other types of fever. The author observes upon the tedious convalescence and the tendency to relapse in this epidemic, as peculiarly trying to the practitioner who might have felt disposed to blame himself for faults of omission or commission, where, in fact, it was the genius of the fever to tend towards a relapse, or remission rather, of symptoms. These observations about the remittent features of the epidemic have been confirmed by other observers in other places.

Copious statistical tables are given of 169 cases from the fever wards in reference to age, sex, duration, state of pulse, skin, tongue; single, double, or triple complications of nervous, respiratory, digestive, and circulating systems, the frequency of relapses, and other important points, which exhibit laborious compilations and comparisons. The rate of mortality varied very much, ranging from 5 per cent., and a portion to 17 per cent. In private practice it was difficult to form a correct estimate. A table of cases which occurred in the Dispensary practice of the Lying-in Hospital, where women and children only are attended, shows that the fever, when occurring amongst children, was, from its tendency to remit, apt to be confounded with the ordinary forms of infantile remittent, but the greater frequency of cases, absence of diurnal exacerbations and other features, served to contradistinguish it.

Several cases of *phlebitis* presented themselves in the two fields of observation, the fever wards and private practice, and in this respect the undoubted importance of the combined relation of facts is exhibited; for this formidable complication, than which none cause more acute suffering, might have otherwise been supposed to be a very rare event, whereas it was evidently from 3 to 4 per cent. in the wards, and perhaps still higher in private practice.

The tendency to relapse proved a serious cause of annoyance.

Phlegmasia dolens occurred in some cases after labour, and erysipelas was common.

As a remoter impression of the epidemic, Dr. Watson states that horses were attacked with fever.

The rate of mortality in the fever wards was for the epidemic period, viz., from September 1843 to January 1844, as 1 in 10.

Corresponding period of preceding year (1842-43), 1 in 16.

For the three preceding months of June, July, August (1843), 1 in 30.

Thus the deaths increased in the proportion of three to one, whilst the number of admissions for this epidemic period were only increased by one third over the corresponding period in the previous year.

The post-mortem appearances were various, according to the number of organs complicated, and these complications would be determined by so many concurrent causes, that we cannot be surprised at any catalogue of lesions of organs. The pure fever changes would have been seen in those cases where, in the fatal results of the collapse, autopsies might have been made; yet here the simple tale of "congestions" would have been all, and the evidence of the extent and precise range of these would require the experience and accurately observing eye of a Louis or an Andral to report upon, as safely contrasted with and removed out of the category of cadaveric sugillations, &c. &c. Ulcerations of the ileum, colon, &c., were observed often. Perforation of intestine in two cases. Extensive softening and dark coloration frequent.

With regard to treatment, Dr. Watson leans to the simpler plan of "laissez faire," instead of routine purgations, &c., the evil effects of which we have all seen too often. He prefers symptom-treating in our present ignorance of the true pathology of fever. He thought that the freer use of camphor might have been serviceable for allaying the anomalous lesions of innervation.*

7. *Sulphate of Quinine in large Doses in Typhoid Fever.*—M. Boucher† has undertaken a series of investigations on the physiological and therapeutical action of the sulphate of quinine in large doses in typhoid fever, a subject which has recently attracted much attention among French practitioners. The following are the conclusions which he thinks himself justified in forming, as the result of his own personal observations:

1st. The non-acid sulphate of quinine, in the dose of from two to four grammes (ʒss-ʒi) in a mixture of 125 grammes, administered in spoonfuls by the mouth, every two hours or more, does not produce any serious consequences.

2d. It is generally taken with repugnance; often immediately after having been admitted into the stomach producing a temporary nausea, and sometimes vomiting.

3d. The mucous membrane of the digestive passages does not experience from it any injurious influence; there is only some slight sensation of heat in the course of the œsophagus to the cardia.

4th. The eruption of the lenticular spots of the skin and sudamina is not modified, and it appears to be the same also with the intestinal eruption.

5th. Its administration is often followed by a remarkable amendment, which is sometimes only transitory.

* Prov. Med. and Surg. Journ. April 1845.

† Gaz. Med., and Prov. Med. Journ. Jan. 3, 1846.

6th. The apparent convalescence is generally rapid, but it is not the same with confirmed convalescence.

7th. This apparent convalescence is owing to the modification of the general condition, the intestines not partaking in this modification.

8th. The nervous phenomena and the slowness of the circulation which are caused by the quinine, soon cease when the administration of the medicine is suspended.

9th. It diminishes the headache, and often causes it to disappear; the pain is then replaced by heaviness of the head.

10th. It often hastens the return of natural sleep.

11th. Finally, it does not appear that the sulphate of quinine should constitute a special method of treatment, but it may prove serviceable, combined with other means.

8. *Fevers of Great Britain.*—The general characteristics of the fevers of Great Britain, and the distinction between what is denominated by the writer enteric (by which we presume is meant typhoid) fever and typhus, form the subject of a recent communication by Dr. Ritchie, of Glasgow.* The first part of the essay is occupied by the detail of the circumstances in which the two varieties of fever agree; the remainder comprises a consideration of the points in which they differ.

Enteric fever and typhus are stated by the author to correspond in the following particulars: 1. In respect of predisposing causes. Whatever induces debility of the system predisposes to both. 2. They both attack every age, and under certain circumstances prevail as epidemics. [Age is, as may be seen by reference to Vol. II, p. 200, adduced by Rochoux as one of the main distinctions.] 3. They have a certain symptomatic resemblance. In both there is depression, followed by pyrexia; in both there is communicability. In both the morbid appearances are so analogous as to suggest the idea that they are modifications only of identical lesions.

The correspondence in symptoms between the two fevers is now shown by the author more in detail. Thus, the abdominal organs which bear the brunt of the morbific agent in enteric fever, also occasionally assume a prominent place in the pathology of typhus. The nerves of special sense, as of sight, taste, and smell, are similarly depraved in both. The phenomena exhibited by the circulating system are occasionally similar, for although prostration of the powers is the rule in typhus, yet in some cases the same excitement takes place as is seen in enteric fever. So likewise with the respiratory and digestive system.

The author next proceeds to point out that the complications and sequelæ of both fevers are often alike. Thus in both there may be convulsions and paralysis, pneumonia, hemorrhages, phlebitis, jaundice, &c. Lastly, they are shown to resemble in being liable one to follow the other when the exciting cause is applied, a fact by the way which the author very properly makes use of as a proof that, though analogous, they are not perfectly identical lesions.

The points of distinction are, in the next place, thus laid down:

1st. The exciting cause is different: it is contagious in 80 per cent. of typhus; cold in 90 per cent. of enteric fever.

2d. Typhus does not follow so immediately upon the application of its exciting cause as does the other.

3d. The author regards the impression of the morbid agent to be made through the skin in enteric fever; the typhus poison, on the contrary, he thinks, makes its first impression on the nervous centres.

* Month. Journ. Oct. 1845.

4th. The sequence of phenomena differs. Thus collapse shows itself at a different period in the disease, and with a different degree of severity. There is a greater tendency to remission in enteric fever, and the critical epiphenomena occur at a later period.

5th. Relapses never take place in true typhus; on the contrary, they are common in enteric fever.

6th. The contagious properties of enteric fever are out of all proportion less than in typhus.

7th. The post-mortem appearances differ. In typhus the results are often negative; or the intestines may be vascular and soft, as may be the spleen, lungs, &c., and the solitary and elliptic follicles may be enlarged and eroded, but not to a greater extent than is also found in scarlatina, smallpox, &c. In enteric fever, on the other hand, besides the appearances in the lungs, the whole or a large portion of the intestinal tube exhibits inflammation, ulceration, or sloughing of the mucous follicles. These appearances are often moreover found at the end of the first week, and have no parallel in typhus, however protracted.

Lastly, the treatment of the two varieties of fever differ. In typhus the general and primary indication is to nurse the vital powers, in the formative stage, by confinement and a light cordial regimen; in the irritative stage, by gentle laxatives, small doses of opium and ipecacuanha, tepid sponging, &c.; in the stage of collapse, by stimulants, internal and external.

In enteric fever, the chief indication is to subdue the follicular inflammation, as well as that in the lungs or other organs, always having regard to the loss of globules and fibrin of the blood, which distinguishes the pyrexiæ from true inflammations. This indication is fulfilled by cupping and leeching, opium and ipecacuanha. The diarrhœa requires chalk, or, if severe, acetate of lead. In advanced stages, wine may be necessary.

9. *Intermittent Fever.—Inversion of the Stages.*—An apparently well-authenticated case of ague, in which the stages were completely inverted, is related by M. Maugenet.* The patient, upon each accession of the fit, was first attacked with profuse sweating, which lasted for an hour; the skin then became dry and hot, and the face flushed, with headache, &c. This stage lasted ordinarily for five hours, when the patient began to feel cold, and eventually had distinct rigors. This remarkable case was cured by quinine, with the same facility as in the more regular form.

10. *Treatment of, by Arsenic.*—M. Masselot† has recorded a favorable opinion of the influence of arsenical preparations in the treatment of ague. From the 1st of January, 1843, to the 1st of January, 1846, 574 individuals were admitted into the Military Hospital of Versailles for intermittent fever; these are arranged in the following comparative table:

		Relapses.
Patients who had taken neither quinine nor arsenic,	142	8, or 5·6 per ct.
treated by quinine	111	14, 12·5
treated by arsenious acid	311	10, 3·5

More than a third of those who took arsenic had previously been treated once or more times by the sulphate of quinine. The mean duration of the quinine treatment was thirty days, of the arsenical, twenty-two days. M. Masselot observes that, although quinine is more safe and easy of exhibition than arsenic, the evidence accumulated by Fowler and Pearson, and still more recently by Boudin, Frick, and others, should entitle it to more consideration

* Revue Méd. Mars 1846. † Archives Gén. Avril et Mai, 1846.

than it has received, as an efficacious and cheap remedy in the treatment of intermittent fever.

11. *Sweating Sickness.*—A case is related by Dr. Laurie,* which is supposed to possess some resemblance to the sweating sickness of former ages. The patient, an active man, æt. 60, was seized with bilious vomiting, and considerable pain in the umbilical region. On the same night, after a comfortable sleep, he awoke in a profuse perspiration, which continued for six hours. The loss of fluid by the skin is described as immense, saturating not only his body linen, but even the mattress of his bed. At ten o'clock the same morning he was seized with what was represented as an ague fit, with cramps and a return of the abdominal pain. When visited he was found in a state of collapse, with husky feeble voice, cold extremities, and intense thirst; some slight vomiting and purging supervened. The treatment consisted of stimulants and cold water ad libitum, under which the patient speedily rallied.

The author, in reflecting upon the above case, notices its close analogy with acute cholera, which it resembled not only in its immediate but also in its secondary symptoms, such as suppression of urine, dark gray stools, grass-green vomiting, &c. He thinks that the case throws some light upon the pathology of cholera, and tends to show that the essential feature of the latter is a loss of the serum from the blood; as in the present case a precisely similar train of consecutive symptoms arose, the discharge being derived from the skin instead of the bowels.

The 'Revue Médicale' of August and September contains an essay by M. Fauconneau-Dufresne, on an epidemic of "Miliary or Picardy sweat," which occurred in the vicinity of Poitiers in the year 1844-5. His essay contains a good resumé of previous epidemics, commencing at the year 1652, in which the first epidemic appeared. This form of the disease, as is shown by Hecker, differs essentially from the "sweating sickness" of the 14th and 15th centuries.

12. *Epidemic Cholera.*—The reappearance of this fearful pestilence in several parts of Asia and Europe, under circumstances of propagation similar to those which attended its progress towards this country at its last invasion, has called forth several works and communications, which may be supposed to embody the experience accumulated during that epidemic, and which are, therefore entitled to some notice at our hands. The principal of these are a volume by Dr. Hartley Kennedy, entitled 'Notes on the Epidemic Cholera;' a pamphlet on the 'Antidotal Treatment of Cholera,' by Dr. Parkin; a paper by Dr. Merriman, in the 'Medico-Chirurgical Transactions;'† another by Mr. Packman, in the 'Medical Times.'‡

The work of Dr. Kennedy is a reprint of one originally published in 1826, and professes to be the result of many years' observation of the disease in India. The pathology of cholera is still a disputed point even among those in the daily habit of witnessing its ravages. The author's opinion is that the essence of the disease is a "nervous derangement similar to concussion of the brain;" and that the purging and vomiting are, though very common, yet not necessary concomitants, and that they are to be regarded as "sanitary processes." This opinion is sustained in his fifth chapter, by a comparison of the symptoms of concussion of the brain from violence, and of that condition of the brain, or nervous system generally, to which the term "shock" is generally applied. In the former part of the discussion he refers to the works of Abernethy and Pott; as an illustration of the latter, he adduces the case of a friend, who was reduced to a state of collapse, precisely resembling that of cholera, by excessive terror, and which

* Month. Journ. Oct. 1846. † Vol. x, New Series. ‡ Oct. 17.

was followed by the forcible vomiting and purging commonly seen in that disease. It is well known to Indian practitioners that among the varieties of type assumed by the disease, that there is one in which the patient suddenly falls senseless, as the first indication, the collapse becomes intense, and vomiting and purging either do not ensue at all, or only towards the close of the attack. The author dwells at some length on these cases, in proof of his position that the essence of the disease is some powerful impression on the nervous system, and that the collapse is not due to the discharges, as it may occur in its most aggravated form without them.

The author is a strong advocate for the contagious nature of the disease, and adduces evidence which, coupled with that accumulated by Dr. Copland (see Abstract, art. 5), leaves an impression upon the mind of the reader of the strongest kind.

[We have long, and from large personal experience of cholera, as it appeared in London, been firmly convinced of its contagious character. In the temporary hospital in Redcross street, Southwark, in which we were at the time resident, scarcely an individual medical attendant, nurse, or porter escaped an attack; and it is remarkable that no cases occurred in the crowded streets in the immediate vicinity of the hospital, and that all the cases admitted were from distant parts of the Borough; such as Kent street, Blackfriars road, &c. The seizure of the nurses, therefore, could not be attributed to any condition of the atmosphere, which, if it had existed, would have declared itself among the inhabitants of the immediate neighbourhood of the hospital.]

The author's treatment may be thus briefly stated. In the severe form above mentioned, which may either be fatal at once, or prove to be the first stage of ordinary cholera, bleeding is first adopted, and an emetic, or emetocathartic, is administered, in order to stimulate the intestinal canal to the evacuations, which, according to the author, are a salutary effort of Nature. When vomiting and purging have been excited to a sufficient extent, the treatment is concluded by a dose of castor oil and laudanum, and slight aromatic stimulants. The oil and laudanum, says Dr. Kennedy, "never fails, when retained on the stomach, to bring on a fæcal discharge, instead of the watery evacuations." The hot bath is strongly deprecated. By the above treatment three out of five of this severe variety of the disease are stated to have been saved.

Of the mode of managing the second, and infinitely more frequent variety of the disease, that in which the vomiting and purging appear as the initiatory symptoms, the author thus remarks: "I know no better mode of answering these (indications) than by abstracting blood; by administering castor oil and laudanum; the former as a mild purgative, to induce a healthy action of the bowels, in place of the inordinate and morbid secretion, and the latter to allay irritability; with a blister to the scrobiculus cordis, and camphor with opium in pills, to allay spasm, and check the purging after vomiting has ceased; and finally, stimulants, to support the sinking state of the patient." The author premises that bloodletting should not be performed when the evacuations have long continued, and positive debility added to nervous collapse. This is an important precaution, as we can pronounce from experience.

The brochure of Dr. Parkin is published for the purpose of recommending carbonic acid as an antidote to the choleric poison. It is given in the form of repeated effervescing draughts.

Dr. Merriman's essay is a valuable contribution to the statistical history of cholera, and gives a minute account of its origin and progress, from its first appearance in 1817 to its final arrival in this country. This author admits its contagious nature, at the same time acknowledging that its spread depended

very materially upon local antihygienic conditions. [This, however, it may be observed, holds good with respect even to the most incontrovertibly contagious malady, such as scarlatina, smallpox, &c.]

Mr. Packman's short communication is written for the purpose of supporting the doctrine of contagion. Some other papers of minor importance have recently appeared in the weekly journals, which our space compels us to pass over.

§ II.—*Accidental Productions.*

13. *Tubercle.*—The following abstract comprises the views of Vogel,* upon the genesis and attributes of this product. With respect to the origin of tubercle, he observes there can be no doubt that it is secreted from the capillaries in a fluid form. It is probable, he thinks, that the effusion is produced by a local hyperæmia. He has never succeeded in finding tubercular matter (as such) in the blood. The microscopic characters are thus stated:

1st. A transparent, amorphous, vitreous stroma, occurring in masses, resembling coagulated fibrin, and similarly influenced by chemical reagents.

2d. Minute granules, varying from the 800th of a line in diameter to an inappreciable minuteness, of a rounded form, and occurring in masses of a brownish colour. The constitution of these granules appears to vary.

3d. Imperfectly developed cells and cytoblasts, with or without nuclei; the former soluble in acetic acid, the latter insoluble; both disappear in caustic potash or ammonia. The size of these varies from the 400th to the 300th of a line. These three elements occur in variable proportions, the granules most frequently predominating.

The softening of tubercular matter is thus described by Vogel: "In the first place, the amorphous stroma liquefies; the elementary granules then separate, and the cells and cytoblasts become liberated, in part break up, and form a sort of emulsion either with a pre-existing or a newly secreted fluid. In this process of softening, most of the surrounding tissues take a share; they also break up, the more delicate first, the firmer resisting the destructive action for a longer period." The mixed fluid resulting from this disintegration has no very definite characters under the microscope, appearing as an aggregate of elementary granules, with cytoblasts and cells.

In his description of the microscopic appearance of the tubercle-cell, Gunther† is at variance with Vogel, and agrees with Lebert that it is a roundish irregular body, from 0·005 to 0·01 millimeters in diameter, destitute of a nucleus, but containing from three to five granular bodies. These cells, together with the elementary granules, form the tubercular granulation. This author mentions that he has twice seen a vascular network between tubercle-cells, in the peritoneum and in the brain; but he thinks the appearance might have been illusory, as neither has he seen it in tubercle of other structures, nor has it been witnessed in any case by others. As might be expected, tubercle of the lungs occupies a large portion of Günther's history of the product. In his inquiries into this branch of its pathology, he has determined that the bronchial fibres and surrounding pulmonary are unchanged, but he finds the capillary vessels enlarged. The anatomical seat of tubercle is stated to be the interstitial texture outside the air-vesicle. The pulmonary texture, for a greater or less extent around the tubercle, is hepatized or indurated, and

* Pathological Anatomy, p. 279.

† Studien zur Speciellen Pathologie, Leipzig, 1843; Dublin Quarterly, Aug. 1846.

the air-vesieles themselves are filled with exudation-corpuscles and tubercle-cells, together with fragments of pulmonary fibres.

Softened tubercle was observed to consist of cells with a large superficial nucleus, and were seen, together with exudation-corpuscles and pulmonary fibres, in the progressive distinction of tubercular cavities.

Tubercle, in the transition state, is found by Gunther to contain a quantity of pigment-cells, together with amorphous and crystallized masses. In the obsolete tubercle, by which the author means tubercle in which the reparative process has commenced, cells appear of 0·003 to 0·005 millimeters in diameter, shrivelled up, and mixed with elementary corpuscles. The author subjoins numerous observations of the sputa in various stages of phthisis. In all cases, he states, that exudation-corpuscles are found as well as the true tubercle-cell, as are also corpuscle-cells and molecules, and occasionally bronchial fibres. The tubercle-cell, as it exists in the sputum, may be distinguished from the exudation-corpuscle, by its remaining unchanged on the addition of acetic acid.

A résumé of several analyses of tubercle, by various observers, has been published by Dr. Bennett, of Edinburgh, in an essay in which he advances the following general conclusions:

1st. That tubercle consists of animal matter mixed with certain earthy salts.

2d. That the relative proportions of these differ in different specimens.

3d. That the animal matter contains a large amount of albumen. Some chemists have also detected caseine, others gelatin. The statement of Guterbock, that tubercle contains a peculiar animal matter, called by him "phymalin," has not been confirmed. Fibrin and fat exist in variable proportions.

4th. The earthy salts are chiefly composed of the insoluble carbonates and phosphates of lime, with a small proportion of phosphate of soda.

5th. Very little difference can be detected between the ultimate composition of tubercle and other so-called protein compounds.

The latest researches on the microscopic anatomy of tubercle are those of Dr. Glover.* This author has examined tubercle from all parts of the body, and finds no essential difference in constitution. The ordinary element of tubercle is the *granular corpuscle*, which varies in size from about the bulk of the blood-globule to the 1-10,000th part of an inch in diameter. They are yellow, and show spots on their surface, perhaps nuclei. In addition to these the author finds epithelial scales, fat-globules, crystals, fragments of tissues, and granular masses of large and irregular forms.

14. *Typhus Product.*—Hamernjk† has made this morbid deposit the subject of lengthened notice in an essay upon the 'Pathology and Diagnosis of Typhus.' He describes it as being, in most cases, deposited in the conglomerate glands, whose structure, as well as the intervening mucous tissue, is entirely destroyed by it. He states that, if the deposition be very extensive, the entire patch of follicles affected may be removed by ulceration. He speaks also of a second form of typhus infiltration which is seldom observed. This form is, according to his observations, exclusively confined to the interior of the mucous crypts, the intervening intestinal structure remaining intact. A plexus of glands thus infiltrated is elevated above the surface of the intestine, and exhibits a multitude of small yellowish scales, giving it a "mosaic" appearance. The intervening spaces are at the same time slightly œdematous. In the progress of the disease these little scales become curled at the edges,

* Pathology and Treatment of Scrofula, Lond. 1846.

† Prag. Viert. Jahr. ii, 1846, in Schmidt's Jahrbücher, Bd. 59, No. 1, 1846.

and eventually fall out, leaving as many small cavities as there were crypts infiltrated. These cavities gradually contract, and their borders become surrounded with a vascular plexus. This species of infiltration is probably the form called "plaques molles" by Louis, and "plaques à surface reticulée" by Chomel. This form leaves no cicatrix.

There is still a third variety of this infiltration, which, like the first, terminates in ulceration, and when it heals is marked by a shining cicatrix.

Günsburg describes the typhus infiltration as consisting of remarkably small transparent cells, without nuclei, but containing diminutive corpuscles. It is deposited in the submucous tissue of the intestines in the neighbourhood of the glands, the mucous membrane in the first instance being intact. The part in which the deposit is most abundant is usually the convex portion of the ileum, and especially that part of it which forms the cæcum. The material continues to be deposited in successive layers until at length the mucous membrane covering it is absorbed, and the typhous ulcer then appears.

Vogel* also devotes a section to the consideration of the same pathological formations, describing them as appearing in the form of a more or less firm lardaceous mass of a yellowish or whitish colour, which is deposited in greater or less abundance amongst the normal tissues, gradually softens, and as the normal elements of the region become also involved in this process, forms ulcers which either heal by cicatrization, or continue until the death of the patient. In many cases death takes place before the commencement of softening. Of the phenomena which attend the softening and cicatrization in the different organs, he here takes no notice; in this place his attention is directed to the mass alone.

This must, in every case, be deposited in the fluid state, and subsequently assume the solid form by coagulation; otherwise it could not so completely fill up all the interstices of the tissues. Upon examination, however, it is invariably found coagulated; at least, he is acquainted with no instance where it has been observed still fluid.

Under the microscope the following constituents are recognized in the mass:

1st. An amorphous, semi-transparent stroma.

2d. Molecular granules, from a size too minute to estimate, to the 800th of a line in diameter; sometimes interspersed with larger fat-globules.

3d. Larger corpuscles (imperfect cells and cytoblasts), from the 800th to the 300th of a line in diameter, rarely larger. Some of these inclose smaller corpuscles (elementary granules and nucleoli), which are wanting in others.

By acetic acid the amorphous substance is rendered more transparent, and at length invisible; the granules as well as the cytoblasts and nucleoli remaining unchanged, whilst the cells become paler, and gradually disappear. By alkalies, on the contrary, the entire mass is rendered diaphanous, and there remain visible only a greater or smaller number of granules; this reaction is produced more rapidly by potash than by ammonia.

15. *New form of Pathological Tumour.*—Dr. Henle† has described a species of morbid growth, which was found attached to the mesentery of a young man who died of peritonitis, which, according to his observations, was composed partly of an entirely new variety of pathological structure. The tumour was seen to consist of three kinds of matter; one white, hard, and fibrous; another, soft and of cheesy consistence; a third, resembling coagulated blood. It was in the latter that the new structure was discovered. After being

* Op. cit. p. 271. Dr. Day's Translation.

† Zeitsch. für Natur. Med. 3 Band. 1 Heft; and Month Journ. Nov. 1846.

macerated for a few days in weak spirit, the dark red mass was seen to exhibit a distinctly fibrous texture, the fibres running parallel, as in muscular tissue. Under a high magnifying power these fibres were seen to be tubular, and to contain a fluid made up of fat-globules, granules, and molecular globules. Between the tubes were thick, irregular masses of granules. The tubes are distinguished from the nerve-tube by the action of alcohol, which leaves the walls more transparent. The size is also different; the tubes of the structure in question being much larger. They are distinguished from capillary vessels, with which they might otherwise be confounded, by the unfrequency of branches and anastomoses.

16. *Cancer.*—The subject of cancerous growths meets with minute attention at the hands of Vogel,* whose remarks we shall here give in a condensed form. The microscopic elements of individual cancerous tumours are very different, and arranged in various ways. Vogel considers each separately. In carcinoma there is seen—

1st A firm and dense amorphous substance, closely resembling coagulated fibrin. It is rendered transparent by acetic and caustic alkalies. This substance he regards as the solid cytoblastema of cancer, and as subsequently converted into cells. The proportion of this element varies in different specimens.

2d. Molecular granules, consisting partly of a modified protein compound, partly of fat. These, however, appear in non-malignant structure, and are, therefore, not characteristic.

3d. Cells. These are never absent in perfectly developed cancer, but are more numerous in encephaloid than in scirrhus. The cells are of two kinds—*a*, those which never go beyond the cell-form, the *characteristic cancer-cell;* *b*, those which are capable of further development.

A. The characteristic cancer-cell presents great variations; the principal of which are described as

α. Peculiar, caudate, ramifying cells.

β. Cells containing numerous nuclei, from two to thirty, or inclosing perfect young cells.

γ. Cells with a thick wall.

δ. Double cells formed by the division of one, or fusion of two cells.

ε. Cells filled with granules.

ζ. Cells inclosing granular pigment.

4th. Fibres of various kinds; some resembling those of ordinary fibrous tumours, others more delicate, and varying in diameter from the 2000th to the 800th of a line. They become pale in acetic acid. There are also fibres which are identical with Henle's nucleated fibres; these are frequently dichotomic, and, unlike the others, become more distinct under the action of acetic acid.

5th. Blood-vessels are sometimes absent in cancer. Generally there are two forms: the one belonging to the normal tissue, in which the cancer matter is developed; the other, as stated also by Walshe, appearing to be a new and independent vascular arrangement. When the new vessels are particularly abundant, we have the variety known as fungus hæmatodes.

6th. Another element is a gelatinous fluid containing mucin or pyin, which coagulates into a streaky mass with acetic acid, &c. This is very abundant in the variety of cancer called "colloid."

The *origin*, *cause*, and *progress* of cancer follow the above description of its elementary constituents. The cytoblastema of cancer is believed by Vogel to arise undoubtedly from the blood, and to be undistinguishable from the liquor

* Op. cit. p. 293.

sanguinis. In some cases hyperæmia preccdes the development of cancer, in others no local determination of blood can be detected; in which case Vogel supposes the ordinary nutrient fluid is by some local unknown influence converted into cancer. The further development of cancer consists in the organization of the cytoblastema and its conversion into cells and fibres. Some of the latter are of cellular origin, but of others, the elastic fibre, nothing decided is known. The mode of increase of a cancerous tumour varies : it may be by the bursting of the old cells and the developmcnt of the nucleus, which in its turn is similarly disposed of; or there may be repeated additions made to the blastema by local congestions with fibrinous exudation. In the latter casc the progress is exceedingly rapid. There is still a third method of increase mentioned by the author, viz. that proposed by Langenbeck, in which a cell gains admission into the circulation, and is developed in some distant capillary, in which it becomes impacted. In this way secondary tumours are supposed to be formcd.

In a note appended to this chapter the parasitic origin of cancer is discussed, and the possibility that it is propagated by the admission of a cell into the blood doubted, from the failure of an experimcnt similar to those of Langenbeck. Reference is also made to its origin in the venous system, as stated by Cruveilhier; but upon the whole the question is left by the author in a state as unsatisfactory as he found it. For description of the varieties of cancer we must refcr the reader to Dr. Day's translation.

PART II. SPECIAL PATHOLOGY.

§ I.—*Diseases of the Nervous System.*

17. *Peculiarities of the Cerebral Circulation.*—We have but one monograph to mention upon subjects connected with the pathology of the nervous system, as having been published during the last semestrial period; but that one is a work which must be allowed to possess very considerable claims to notice. We allude to Dr. Burrows' recent publication on the 'Disorders of the Cerebral Circulation, &c.'

Thcre are few practitioners of the present day whose notions of the nature and treatment of diseases of the brain have not been morc or less influenced by the attractive hypothesis first promulgated by Alexander Munro, and afterwards maintained by Abercrombie, and more especially by Dr. Kellie, that the cranium being a perfect sphere resisting atmospheric pressure, and containing a nearly incompressiblc organ, the quantity of blood which circulates within it could never undcrgo any material variation. It has been taken for granted, even in the face of daily experience, that determination of blood to the head was a fiction; and that bleeding under the impression that blood could be removed from an overgorged brain was a proceeding based upon an erroneous theory. Such opinions will doubtless be either entirely abandoned or greatly modified by a perusal of Dr. Burrows' volume, of which we shall now proceed to give an analysis.

The work consists of two distinct parts, the first of which may be regarded as a physiological inquiry into the circulation of the brain; the second invcstigates the relation which exists between affections of the brain and diseases of the hcart. The latter portion of the work will be noticed in a future page.

The mechanism and peculiarities of the cerebral circulation occupies three sections. In the first we have a brief account of the doctrine which it is the author's object to disprove, and of the experiments upon which that doctrine was established; we have then a description of a reperformance of the same experiments by Dr. Burrows, and the enumeration of the conclusions to which he was led, and which we may state in anticipation are directly opposed to those of Dr. Kellie. The inferences deduced by this physiologist it may be remembered are to the following effect: 1. That a state of bloodlessness of the brain is not discovered in animals dead by hemorrhage, but on the contrary, commonly a state of venous congestion. 2. That the quantity of blood in the cerebral vessels is not affected by gravitation or posture. 3. That cerebral congestion is not found in persons who die asphyxiated, whether strangled, hanged, or suffocated. 4. That if there be repletion or depletion of one set of vessels, there will be an opposite condition of the other. In order to test the truth of these inferences Dr. Burrows instituted a series of experiments which we here recapitulate.

Exp. 1. Two full-grown rabbits killed, one by opening the jugular vein and carotid artery, the other by strangulation. Convulsions took place in each. While dying the conjunctiva of the first was observed to become pallid, that of the second to become congested. After death the following differences were observed:

Of the 1st. The integuments of the head blanched and ex-sanguine; membranes of the brain pallid; sinuses nearly empty; brain itself perfectly anæmic.

2d. Integuments and muscles of the head full of blood; membranes injected; sinuses full of dark blood; substance of the brain of a reddish hue, as if stained by extravasated blood. (This contrast is strikingly represented in plates 1 and 2.)

The above experiments have reference to the effects of depletion and strangulation; the next were performed to decide the influence of gravitation.

Exp. 2. Two rabbits were poisoned by prussic acid, and while their hearts were still pulsating one was suspended by the ears, the other by the hind legs, for the same space of time; precautions being taken to prevent any change in the condition of the fluids when they were removed from their positions; they were examined with the following results:

Of the 1st. Integuments of the head, the ears, eyeballs, &c., pallid and flaccid; muscles of the scalp ex-sanguine; membranes and substance pallid; sinuses and vessels remarkably empty.

Of the 2d. Ears, eyeballs, muscles, and integuments of the head turgid with blood and livid; membranes and vessels turgid with liquid blood; sinuses gorged; substance congested to an extreme degree.

It is thus rendered evident that posture has a decided effect upon the quantity of the blood in the cerebral vessels.

In examining Dr. Kellie's third inference that the brains of individuals dead by strangulation are not unusually congested, Dr. Burrows takes the opportunity of mentioning cases in which a most distinct fulness of blood-vessels was observed, and accounts for its non-observance in the instances mentioned by Dr. Kellie, upon some peculiarity in the position of the rope, or by want of precaution in examining the cranium, or by the subsidence of the blood after death, the possibility of which is amply proved by his experiment above described. The fallacy of the fourth inference is then exhibited, and the section concludes with the expression of the author's conviction:— 1. That bloodletting does affect the quantity of blood in the brain. 2. That posture does exercise a marked influence in the quantity of blood; inferences the importance of which in a practical point of view need not be pointed out.

In the second section, Dr. Burrows discusses a question of great importance in cerebral pathology, namely, the effect of vascular pressure upon the nervous matter. He shows that a constant source of pressure exists in the momentum of the blood, distending the arteries and veins which ramify in the substance of the brain and its membranes, and that this pressure must in the brain be exerted with full force, because from the undilatable nature of the cranium, its contents cannot expand *en masse*, as in the case of other vascular organs. That injurious effects do not more constantly follow the necessary variation of this pressure in a state of health, is accounted for in two ways,—by the great development of the venous system within the cranium and spinal canal, which affords a ready exit for the redundant blood, and, in the second place, by a natural contrivance not sufficiently insisted upon by anatomists, namely, the existence of a cerebro-spinal fluid. This fluid is shown to play a most important part under every condition of the brain, both physiological and pathological, as by its capability of oscillation between the ventricles of the brain and the spinal canal, it is peculiarly fitted to compensate for any variation in the quantity or tension of the circulating fluids of the brain. When by increased action of the heart more blood than common is thrown upon the cerebral vessels, the cerebro-spinal fluid subsides into the spinal canal, and injurious pressure upon the cerebral pulp is thus, within certain limits, averted; and, on the other hand, if less blood than usual passes into the brain, the fluid rises into the cranium, and the equilibrium of tension is preserved. Upon this principle of vascular pressure, the author of the work before us explains many of the symptoms of cerebral disease generally attributed to other causes; for instance, apoplectic coma is supposed to depend not upon the direct pressure of the clot, but upon the associated increase of vascular tension of the cerebral vessels, which, as there is an extraneous quantity of matter in the cranium, (the clot) cannot be wholly compensated for by the descent of the cerebro-spinal fluid. The symptoms of anæmia, likewise, are said not to be due either to want of balance between the circulation in the arteries and veins, as is generally taught, nor to a deficient supply of blood to the brain, but to a loss of tensive equilibrium. The same with regard to fainting.

Dr. Burrows's third section is occupied with the rationale of coma, the proximate cause of which, as it occurs in the three forms of apoplexy, simple, sanguineous, and serous, is briefly discussed. In the first form the author believes, that although no signs of congestion are found after death, that congestion has nevertheless been present during life, and that it has been removed either by the powerfully depletory measures usually resorted to in such cases, or by subsidence after death, both of which he has proved to be effectual in diminishing the quantity of blood in the brain. That death should take place in simple apoplexy, although the efficient cause of coma may be removed, he explains upon the principle that the brain has been saturated by decarbonized blood, and is, therefore, as after the operation of tracheotomy too long deferred, unable to resume its function. In serous effusions also, as well as in extravasation of blood, the cause of coma is shown to depend, not upon the presence of the effused fluids, but upon a superadded congestion of the cerebral vessels.

18. *Influence of Heart Disease in Affections of the Brain.*—In the second part of his volume Dr. Burrows enters minutely into the connexion between cerebral and cardiac diseases, proving the existence of a much closer dependence of diseases of the former class upon heart disease than is commonly suspected. He commences the fourth section of his book by illustrating the connexion between apoplexy and hemiplegia with structural change in the

heart. The opinions of the principal authors of the present century are adduced in order to show that although some entertained a vague impression that such connexion did exist, the real frequency and importance of the connexion was far from being suspected.

To exhibit in the clearest manner the true bearings of the question, Dr. Burrows next brings forward a table of 132 cases of apoplexy and hemiplegia compiled from Andral, Hope, Clendinning, Bricheteau, &c., from an examination of which it appears that "in any given number of cases of apoplexy and hemiplegia, no less than three fifths may be expected to present heart disease, either hypertrophy, dilatation, or valvular disease, separately or conjointly. The manner in which each of these conditions of the heart may affect the circulation in the brain are sufficiently intelligible, and it will be readily surmised that a combination of obstructive disease, with hypertrophied parietes of the organ, would be more influential in distending and causing rupture of the vessels of the brain than either separately. That such is the case is, however, demonstrated by a reference to cases. In 38 cases of heart disease coexisting with apoplexy, hypertrophy with valvular disease existed 19 times, hypertrophy alone, 10, valvular disease alone, 8.

The age most prone to apoplexy is next considered as closely connected with the preceding inquiry. Dr. Bright states it as his impression that most apoplexies occur after 40, some after 60. According to Dr. Copland, between 40 and 70 is the period generally fixed upon. Hope considers the two periods between 40 and 50, and 70 and 80, as those during which fatal apoplexy most frequently occurs. Dr. Burrows believes that these and other statements to which he refers are more or less erroneous, and concludes, from the analysis of an extensive series of cases, that the relative frequency of apoplexy steadily increases from 20 to 80 years of age, the actual number of cases steadily increasing during each decennial period, while the numbers living gradually diminish. "Hence," observes Dr. Burrows, "the frequency of apoplexy at advanced periods of life, the usual coexistence of hypertrophy of the heart at the same period, and the ascertained tendency of cardiac disease to produce disease of the brain, are facts which, taken in conjunction, confirm the conclusion arrived at in the previous part of the section, namely, that the coincidence between apoplexy and diseases of the heart is something more than accidental."

We may pass over the fifth section on the treatment of apoplexy, &c., as it will be found condensed in a previous page (art. 6), and proceed to give a brief digest of the sixth section of the book, "on the influence of disease of the heart in exciting functional disease of the brain." The author first invites attention to the state of the heart in severe cases of *epistaxis* in adults of middle age, and relates five cases in illustration. Headache is also regarded as a more frequent symptom of disease of the heart than is usually supposed, especially in persons who have led intemperate lives.

The concluding section embraces the "affections of the brain and cord depending upon acute diseases of the heart;" many cases of which of extreme interest are related, including instances of pericarditis simulating disease of the brain, and treated as such; pericarditis accompanied with chorea, endocarditis complicated with insanity and with apoplectic coma; and, lastly, pericarditis complicated with tetanus (art. 10). The section concludes with some remarks upon the pathology of these cases as a distinct class of nervous affections.

The author observes that when peculiar nervous symptoms occur in the course of rheumatism or pericarditis, it is generally supposed that metastasis to the brain has taken place. Without denying the occasional occurrence of

such a phenomenon, Dr. Burrows is inclined to regard it as the exception, since in eleven such fatal cases no trace of disease could be found in the brain or its membranes; the explanation which finds most favour with him is that advanced by Dr. Bright, that the cerebral irritation is excited through the medium of the phrenic nerve.

19. *Epidemic Cerebro-spinal Meningitis.*—The disease of which an account, as given by Dr. Darby, is mentioned in our last Volume, p. 75, has more recently been noticed by Dr. Mayne,* who witnessed it in the Irish workhouse to which he is medical attendant. The pathology of the disease as described by him appears to have been uniformly the same in all the cases examined.

In the post-mortem examinations which have fallen under Dr. Mayne's notice, the scalp and dura mater exhibited but little undue vascularity; the pia mater covering the hemispheres of the brain was congested, and the large veins, in their way to the several sinuses, appeared remarkably turgid. The free surface of the cranial arachnoid felt dry and clammy, and had lost its transparency in many places, particularly at the base of the brain; but there was no lymph or other inflammatory effusion in the sac of the arachnoid. Lymph of a yellowish or greenish hue appeared on the surface of the encephalon *beneath* the serous tunic; this occurred sparingly on the upper surfaces of the hemispheres, and there only along the sulci, but at the base of the brain it was found in greater quantities, especially in the sub-arachnoid space corresponding to the circle of Willis, where many of the cerebral nerves at their origin were fairly imbedded in it. In the spinal canal a similar exudation filled the sub-arachnoid space; it there existed in sufficient abundance to envelop the cord completely; it also extended down to the lowest extremity of the cauda equina, investing each of the spinal nerves at its source; but in the vertebral canal, just as in the cranium, the cavity of the arachnoid contained none of this morbid secretion. The substance of the brain and spinal marrow appeared remarkably free from lesion; there was no unusual vascularity, induration, or softening apparent, nor did the ventricles betray any evidence of inflammation. A remarkable feature of this malady is the class of persons on whom it has seized. In Ireland, so far as has been ascertained, boys under twelve years of age have been, with few exceptions, its only victims; the seven cases reported by Dr. Darby were all boys, and only one of them had passed his twelfth year; in Belfast ten cases of the disease were noted, all occurring in boys from seven to twelve years of age; and in Dr. Mayne's experience, individuals of the same description have alone been attacked. It is also a curious circumstance that in France the complaint appeared for the most part amongst the conscripts who had lately joined their regiments; and Versailles, Lyons, Metz, Strasbourg, Avignon, Nancy, and Poitiers, were the places in which it proved most destructive to life. Although females have been very rarely attacked, yet they are not exempt from its invasion, for, at the Hardwicke Hospital, one of Dr. M'Dowel's patients was a girl of seventeen, and the other a woman aged thirty-six years.

The symptoms by which this affection commences are in general of a very formidable character, and its accession is usually sudden and quite unexpected; in the majority of cases the patient has been in his ordinary health and spirits up to the very moment of the seizure, and has experienced no premonitory symptoms to warn him of his danger. In four of the cases at the South Dublin Union the boys had eaten a hearty dinner and retired to bed in apparent health, when the disease all at once declared itself. In many instances it commences with severe pain in the abdomen, followed immediately by vomiting, and not unfrequently by

* Dublin Journal, and Med. Times.

purging. In the worst cases these symptoms are accompanied by marked collapse, the extremities are cold and blueish, the pulse is at this time a mere thread, and altogether the disease assumes very much the aspect of cholera. After the lapse of a few hours, reaction, more or less perfect, ensues; the muscular system then presents characters which may be considered almost pathognomonic. The muscles of the extremities, and those of the neck in particular, become remarkably rigid, the head is drawn back upon the vertebral column, and firmly fixed in that unnatural position; no efforts of the patient can bend it forwards, neither can the attendants do so, at least by the employment of any justifiable force. The countenance at this period often assumes very much the tetanic expression; twitchings of the muscles of the face sometimes ensue; the patient loses, in great measure, the power of moving his extremities, so that he is quite unable to assume the erect position, the surface becomes hot, the pulse full and frequent (from 120 to 140); the stomach often continues irritable, whilst an insatiable thirst torments the sufferer; and the epigastrium evinces marked tenderness upon pressure. Symptoms of a still more distressing nature quickly supervene; the patient may be seized with general convulsions, of frightful severity, requiring personal restraint to protect him from injury; or he may lie in a semi-comatose condition, constantly moaning and grinding his teeth, or even crying incessantly. Towards the close of his sufferings he generally merges into perfect coma, the pulse becomes slow and laboured, the powers of speech and deglutition fail, his stools are passed involuntarily, and death finally closes the scene. All this may occur in a surprisingly short space of time; some of the cases ran their course in forty-eight hours, and the greater number terminated about the fourth day, whilst some few were prolonged over a fortnight or three weeks. Examples are on record of death from the disease in so short a period as fifteen hours. The fatality of the complaint in Ireland has been very great, but continental practice has been even still more unsuccessful. Dr. Mayne is of opinion that the active exhibition of mercury will be considered the sheet-anchor in England and Ireland, in the treatment of this as it is in that of other diseases of the serous membranes.

20. *Cerebellum, Disease of.*—Dr. Hutton exhibited to the Pathological Society of Dublin the morbid appeances in a case of tumour in the cerebellum, the history of which bears out the assertion of M. Toulmuche (Half-yearly Abstract, Vol. II, p. 210), that extensive disease may exist in the cerebellum without producing any disturbance in muscular action, or influencing in a marked degree the generative organs.

The subject of it was a young woman of phlegmatic and unhealthy appearance, who came to the Richmond Hospital for the purpose of being operated on for entropia of the eyelids, which had produced opacity of the cornea. She was admitted three days previously, having made no mention of any other complaint. While Dr. Hutton was going through the ward this patient was suddenly seized with a fit. She became insensible, the breathing slow and laboured, inspirations attended with stertor, and expirations with moaning; the muscles were rigid, and the extremities fixed, but there was no convulsive motion of the limbs. The face was swollen and suffused, the pupils fixed and dilated; the pulse was weak, the surface rather cold. She had vomited a short time previous to the fit. From this she gradually recovered, and spoke rationally to those around her; but she was seized soon after with a second, and again with a third attack, in which she died. Dr. Hutton was informed by a patient in the same ward, that the deceased had said she was subject to fits, and it appeared that she had for two days previously occasionally vomited

her food and drink, and had felt pain in her head, of which, however, she had not complained to Dr. Hutton or the resident pupil.

Post-mortem examination.—On proceeding to examine the brain, it was observed, when the cranium was opened, that the dura mater had a remarkably dry appearance. On raising this membrane the brain started up, as if it had been previously much compressed; its vessels were not congested, there was no opacity of the arachnoid membrane, nor any sub-arachnoid effusion. The sulci between the cerebral convolutions were not less deep than usual. The lateral ventricles contained three or four ounces of serum, and seemed considerably dilated. In other respects the cerebrum was of healthy appearance and consistence; but in the left lobe of the cerebellum was found a cavity or cyst, containing about an ounce of serum, lined with a smooth membrane, and not communicating with the fourth ventricle. In the substance of the cerebellum, and projecting into the cavity described, was a tubercle which exactly resembled the encephaloid flesh-tumours of the brain, which he (Dr. Hutton) had exhibited on a former occasion to the society. He remarked that in the present case the disease of the cerebellum had probably been of some duration, and it was worthy of observation, that, previous to the last fatal attack, this patient had not only manifested no impairment of sensation or intellect, but the locomotive powers, which are said to be regulated by the cerebellum, were duly exercised, and indicated no defect, notwithstanding the imperfect and morbid condition of so large a portion of the cerebellum. Although there was a considerable quantity of adipose matter throughout the body, the mammæ were as little developed as in a male subject; the uterus was of small size, the ovaries, &c., natural, and the function of menstruation had been regular.

21. *Spinal Irritation.*—In addition to the papers on this subject, which will be found among our Abstracts (arts. 7 and 8), we have to notice some observations by Dr. Huss, which occur in his report on the Royal Hospital of Stockholm, and are briefly reviewed in 'The British and Foreign Medical Review,' October, 1846. The symptoms, as stated by the reviewer, are arranged under the following heads: 1. Pain in various parts of the vertebral column, either spontaneous or developed by pressure. 2. Cramps, either of a clonic or tonic character. 3. Loss of power in various degrees. 4. Altered sensibility.

In speaking of the pain, Dr. Huss lays more stress on that produced by pressure than on the spontaneous form, but does not deny that it occurs in organic disease of the spinal column also, and is therefore not diagnostic. He rejects the idea that the pain is caused by the action of the pressure upon the spinal marrow itself, as also that it is seated in the integuments alone, as asserted by Stilling. He considers that the pain depends upon a neuralgia of the vertebræ themselves, an explanation which is considered plausible by his reviewer.

The *diagnosis* of spinal irritation is regarded by Dr. Huss as extremely difficult.

The *causes* are stated to be—1, Contusions and strains of the spinal column; 2, Intense depressing emotion; 3, Lesions and irritation of the periphery of the spinal nerves; 4, A disordered state of blood (the neuræmia of Dr. Laycock).

In the *treatment*, the author places little confidence in depletion or counter-irritation of an active kind, but has seen benefit from both, mildly applied. The warm bath is occasionally useful, more so if ℥j of caustic potash be added. Excess in warm clothing is pernicious. Purgatives are generally necessary, and tonics, and more especially iron, are regarded as of great importance.

Narcotics are also highly praised when convulsive symptoms are present. Exercise and dietetics are properly insisted upon.

22. *Hysteria.*—The following conclusions respecting the pathology and treatment of hysteria appear in a memoir offered by M. Gendrin* to the Académie de Médecine:

1st. Hysteria is not universally characterized by convulsive paroxysms; it is a *continuous* malady, the symptoms of which are always to be recognized during the interval between the paroxysms, as well as in the fit.

2d. In all cases of hysteria, without exception, a general or partial anæsthesia exists. In the slighter degrees, the anæsthesia occupies only particular parts of the integuments; in the more aggravated forms the whole integument is implicated, as are also such portions of the mucous membranes as are amenable to examination.

3d. There is no accordance between the degree of anæsthesia and the severity of the hysteric paroxysm.

4th. The greater number of patients experience over a limited part of the body a degree of hyperæsthesia which is in many cases the immediate cause of the fit.

5th. Paralysis is a frequent hysterical symptom, and may be prolonged for an indefinite time. This paralysis is the source of many serious errors in diagnosis.

6th. It is a mistake to consider the sensation of a ball in the throat as a constant accompaniment of hysteria.

7th. All the marvels related of late days as the production of animal magnetism are witnessed in spontaneous hysteria; so the insensibility which will allow a painful operation to be performed may be seen in hysteria.

8th. Of all medicinal agents there are none which is so efficacious as opium in large doses.

23. *Chorea.*—A dangerous form of this nervous affection has recently been commented upon by Dr. Dubini,† under the title of 'Electrical Chorea.' It seems that a small portion of the body only is affected in the first instance, as a finger, or one side of the face; but in a short time the whole of the same side of the body becomes involved. The movements consist of severe convulsive paroxysms, accompanied by rapid pulse, and profuse sweating.

In most cases fear appears to have been the exciting cause, but in some no such explanation could be admitted. During the convulsion, which is generally limited to a certain set of muscles, the articulation is imperfect, the limbs are tumid, and the surface so morbidly sensitive that spasms are excited by the slightest touch. The patient generally dies comatose, and almost all void lumbrici. The disease appears very fatal, two only out of thirty cases seen by the author having recovered. Necropsy gives no clue to the pathology of the affection. The author concludes his essay by a minute differential diagnosis, in which he vindicates its title to be distinguished from tetanus, epilepsy, chorea, &c.

Dr. Marshall Hughes‡ has furnished an analysis of 100 cases of chorea, upon which he has founded a very interesting report. In speaking of the causes of the disease, he finds that the common opinion, that it is more prevalent in females than males, is correct; among the cases observed by himself, three fourths were females. The preponderance in this sex is explained by its greater excitability, especially about the period of puberty. The *age* most frequently affected is shown to be below 15 years. There were 22 males and 56 females below that age; 5 males and 17 females above it. Among the

* Archives Gén. Sept. 1846. † Annali Univers.; Encyclog. Med.; Med. Chirurg. Rev. Oct. 1846. ‡ Guy's Hospital Rep. Oct. 1846.

exciting causes fright holds a prominent position. Next to this stands rheumatism, which appears to operate by inducing pericarditis.

For Dr. Hughes's remarks on the treatment of chorea, see art. 12,

24. *Neuralgia, Tobacco in.*—Mr. Gower,* an American practitioner, bears testimony to the efficacy of the extract of tobacco in neuralgia, as recommended by Mr. Chippendale (see Abstract, Vol. I, p. 15), and appears to have been in the habit of employing it for a considerable time prior to the publication of the latter writer's communication.

Dr. Castle† of New York regards dental irritation as the exciting cause of many obstinate cases of neuralgia, even in parts of the body far removed from the original source of the irritation. Cases are related in which neuralgic pains of various parts, which had resisted for years all treatment, were cured by removal of teeth apparently sound, but which proved to be eroded at the fang. The author detects this state of the tooth by tapping it with some hard substance.

25. *Relation of Neuralgia of the fifth to Paralysis of the third pair of Nerves.*—M. Marechal (de Calvi) has presented a memoir to the French Academy of Medicine, in which he endeavours to point out that neuralgia of the fifth pair and paralysis of the third pair of nerves stand in the relation of cause and effect. The author's opinions are founded upon the examination of five cases, in each of which the paralysis was plainly preceded, for a greater or less period, by neuralgic pains. His explanation of the phenomenon is derived from the anatomical relations of the two nerves.

26. *Tetanus.*—In addition to several successful cases of tetanus described in our previous volumes, we now call our readers' attention to three instances of the traumatic form of the disease in which recovery took place.

Dr. M'Girr‡ narrates a case which apparently originated in the extraction of a tooth, which was treated by morphine, and the application of ice to the spine. The action of the latter agent is described as most striking, the patient expressing herself in strong terms of the relief afforded by it.

A second case reported by Dr. Heister§ was treated successfully with the Indian hemp. The dose was two grains of the extract every half hour until sleep supervened. The patient became tranquil after the second dose, and after the fourth slept for two hours. The spasms returned when he awoke, but with decidedly less severity; the medicine was, therefore, resumed in five-grain doses every hour, when the third dose again induced sleep. The spasms were now greatly abated, and on the third day the patient was able to open his mouth, and was convalescent in two days after.

[The above case is one of the most striking which has been recorded in favour of the cannabis, as recovery took place within the period in which the disease usually proves fatal.]

The third case to which we alluded occurred to Mr. Greenhow,‖ of Newcastle. The treatment was opium at first alone, and subsequently in combination with tartar emetic. It is to be remarked that this case lasted from 12th of May to the 15th of June, and was, therefore, chronic tetanus, a form which not unfrequently terminates favorably under every mode of treatment.

§ II.—*Diseases of the Respiratory System.*

The past six months have been unusually deficient as to the number of communications upon the diseases of the organs of respiration; we have,

* Boston Med. and Surg. Journ. April 1846. † Lancet, Sept. 5, 1846. ‡ Philadel, Med. Exam. April 1846. § Boston Med. and Surg. Journ. July 1846. ‖ Prov. Med. and Surg. Journ. Sept. 2, 1846.

therefore, but few to mention as worthy of further publicity, which are not already before our readers. Vide *supra*, pp. 30 *et seq.*

27. *Phthisis—Cod-liver Oil in.*—The efficacy of the oil of the cod's liver in phthisis pulmonalis has recently been attested by several observers. Dr. Thompson,* who is one of the physicians of the Hospital for Consumption and Diseases of the Chest, at Brompton, states that he has derived more benefit from it than from any other medicine which he has tried. He has exhibited it in thirty-seven cases with the following results. In three cases it was found necessary to discontinue it, in consequence of the nausea which it occasioned; in twelve the reduction of strength appeared to be slightly retarded; in twelve there was no perceptible effect; in ten the increase of strength, plumpness, and energy was remarkable. When benefit was derived, it was generally to be observed within a fortnight.

Dr. Toogood,† of Bridgewater, and M. Delstanche,‡ have likewise spoken of its value.

Dr. Huss,§ of Stockholm, speaks favorably of moxas below the clavicles in the treatment of phthisis.

28. *Typhoid Pneumonia.*—Dr. Huss‖ considers the ethereal oil of turpentine of essential value in that form of pneumonia which is apt to appear between the eleventh and fourteenth day of typhoid fever, particularly in those cases in which debility of the heart's action is announced by a diminution or absence of the first sound. The heart in this state is unable to propel its contents through the capillaries of the lungs, and congestion ensues. He considers also a viscid, more or less, bloody expectoration, dullness on percussion, with crepitating or tubular respiration, as equally indicative of the necessity for its use. The formula preferred by Dr. Huss is as follows: R. Ætherol. terebinth. ℥ss.; ovor. vitell. j; mucilag. ℥iij; aquæ ℥j. ft. emulsio. A teaspoonful every hour.

29. *Pleuritis.*—The existence, in effusion into the pleura, of bronchial respiration, until recently supposed to be diagnostic of consolidation of the lung, is confirmed by the reports of two cases of disease of the heart, with hydrothorax, lately published by Dr. Jackson,¶ an American physician. The occurrence of bronchial respiration under these circumstances had been previously noticed by several French writers, more especially by Grisolle, and Barth and Roger, all of whom had met with it in as many as half the cases examined. That some difference, however, may be detected in the character of the sign as it occurs in hepatization and pleuritic effusion respectively, appears to be generally admitted; in the latter it is decidedly less tubular, and more tremulous than in the former. It is not very clear how far we may be justified in estimating the quantity of the effusion from the fact of the presence or absence of this sign; and in this respect Dr. Jackson is widely at variance with the writers above quoted, who believe that it can only be heard when a thin layer of fluid intervenes between the lung and pleura, whereas, in Dr. Jackson's cases, it was plainly heard, although the chest was full of fluid.

Dr. Durrant** relates a case of pleurisy, in which an event of not very frequent occurrence took place, namely, the spontaneous evacuation of the contents of the pleural sac through an orifice in the thoracic parietes. The case was one of empyema supervening upon measles, and the patient had every appearance of rapid sinking previous to the discharge of pus. After this event he speedily regained his strength, under the use of the iodide of iron. It did not appear in this case that the air which had free admission into the chest was

* Lancet, June 27, 1846. † Prov. Med. Journ. Oct. 14, 1846. ‡ Annales de Thérapeutique, 1846. § Brit. and For. Med. Rev. Oct. 1846. ‖ Op. cit. ¶ Amer. Journ. of the Med. Sciences, Jan. 1846. ** Prov. Med. and Surg. Journ. Oct. 21, 1846.

productive of any of the inconvenience so much dreaded by some in the operation of paracentesis thoracis.

30. *Asthma.*—The plan of treating the asthmatic paroxysm recommended by Mr. Harrison (see Abstract, Vol. I, p. 203) has been tried with success by a correspondent of the ' New York Medical Gazette,' both in his own case and in that of a patient.

31. *New Pulmonic Murmur.*—Dr. White,* of Newcastle-upon-Tyne, has described what he believes to be a new pulmonic murmur, which presented itself to him in a prominent manner in three cases of hæmoptysis. " It is a soft, minute, and continuous crepitating murmur, smaller than the ordinary pneumonic râle, and entirely uninfluenced by respiration." Its chief value is considered to consist in its being indicative of hæmoptysis, Dr. White never having heard it excepting in that connexion.

§ III.—*Diseases of the Circulatory System.*

Among the extracts contained in the present volume will be found some very valuable contributions connected with the pathology of the heart and great vessels. To these we need not more particularly refer in the present place; of other communications upon the same subject, the principal will be found briefly mentioned below.

32. *Iron in Cardiac Diseases.*—The utility of the preparations of iron in both functional and structural diseases of the heart, forms the subject of a short communication by Dr. Powell.†

Of functional or nervous affections of the heart, the forms in which he has found iron beneficial are as follow:

Palpitation, especially if sympathetic of dyspepsia, uterine derangements, hysterical or other nervous maladies, and when manifestly attended with the anæmic state, arising in persons of a lymphatic or nervous temperament, and relaxed habit. Tendency to syncope, with much precordial anxiety, to be attributed to deficient energy, referrible to a generally depressed condition of the nervous system, in which the heart participates in common with other parts of the system, to impoverished blood, or to sympathy with associated organs; the anæmic state being likewise well marked. Angina pectoris, when apparently not arising from or connected with structural alteration; or, if thus associated, partaking of a passive character.

Amongst the class of structural diseases he mentions passive dilatation, with a normal or attenuated state of the parietes, or with predominance of dilatation over hypertrophy, more immediately indicated by quick and clear cardiac sounds; and dropsical affections consecutive to this disease, attended with leaden or pallid and tumid countenance, paroxysms of orthopnœa or syncope, and copious expectoration.

In all these diseased conditions of the heart, chalybeates exert a very happy action; but Dr. Powell feels more disposed to use artificial preparations of iron in passive enlargement of the heart, repletion of the vascular system being liable to ensue from the chalybeate water.

33. *Rupture of the Heart.*—Two additional cases of this lesion have been recorded. One of these, which is described in a report of the Liverpool Pathological Society,‡ is particularly interesting, the rupture having occurred in the left auricle. The patient was a lady aged 74, who was found dead in

* Lancet, May 23, 1846. † Prov. Med. and Surg. Journ. Sept. 30, 1846.
‡ Edin. Med. and Surg. Jour. July 1846.

her bed. The pericardium was found filled with blood, from a circular opening in the above-mentioned cavity.

The second case referred to is related by Mr. Meade,* and is an instance of rupture in the usual spot, near the apex of the left ventricle, caused by fatty degeneration. Death was instantaneous.

34. *Abscess of the Heart.*—Primary abscess of the heart is a sufficiently rare affection to invest the two following cases, recently recorded, with considerable interest. The first case, which is narrated by Mr. Chance,† is supposed by him to be one of the only two on record; but in this the writer is mistaken, as he will find by a reference to Morgagni, Bouillaud, Carswell, Hasse, &c. The case alluded to was that of a boy, aged 13, who was seized with sudden vomiting, followed by collapse, and died comatose on the following day. He had previously been in apparently good health, and had not complained of anything which could draw attention to the state of the heart.

On examination after death, an abscess was discovered in the parietes of the left ventricle, which communicated both with the pericardium, into which a thin purulent fluid had escaped, and with the left ventricle, so that the contents of the abscess must necessarily have been mixed with the blood.

Another case, in many particulars similar to the above, is described by Mr. Howitt,‡ of Lancaster. The patient was a child, aged 8 years, who, after complaining of an apparently neuralgic pain in the calf of the leg, became, like the former, dull, and eventually comatose. After death an abscess was found in the walls of the heart, which had opened both into the pericardium and right auricle, which latter cavity contained a mixture of pus and blood. The pericardium contained a pint of purulent matter, mixed with flakes of a cheesy consistence.

35. *Partial Aneurism of the Heart.*—The mode in which this lesion originates, and its progress, are investigated in an essay by Dr. Peacock, published in a recent number of the 'Edin. Med. and Surgical Journal.'§ His statements are to the following effect:

1. In the earliest form in which the affection can be recognized, we observe thickening and opacity of the endocardium, with slight dilatation of the corresponding portion of the walls of the ventricle, and attenuation of the muscular substance, without marked alteration of its texture. 2. In a more advanced stage, there is thickening and opacity of the endocardium, and conversion of a more or less thick stratum of the muscular substance into a dense tissue of a pale yellow colour, composed of fibres resembling those of tendon intermixed with muscular tissue. The parietes have now become more atrophied, and the corresponding portion of the cavity of the ventricle presents a more marked dilatation. 3. At a later period, together with the thickening and opacity of the endocardium, the membrane becomes intimately blended with the subjacent tissue, so as not to be distinguishable from it. The attenuation and atrophy of the walls is greater, and the dilatation of the corresponding portion of the cavity occasions a more or less marked prominence externally.

While these changes take place in the ventricular parietes, others are proceeding in the interior. The dilated portion of the cavity is gradually filled with thin, loose coagula, which subsequently become firmer and pale. As the disease progresses, the author believes that the endocardium is destroyed, and the aneurism then assumes the characters of the *false consecutive* variety.

36. *Dissecting Aneurism.*—Two cases of this rare disease have been recorded since our last Report, one of which appears in a former page (art. 20). The

* Lancet. Med. Times, June 6, 1846. † Lancet, May 16, 1846. ‡ Lancet, June 20, 1846. § Oct 1846.

other case occurred to Dr. Todd,* and is made the subject of a clinical lecture by him. The patient was a female, aged 36, who was seized with urgent dyspnœa three months before her death, hæmoptysis likewise occurred at two or three different times. Her symptoms, on admission, were dyspnœa, delirium, deep jaundice, ascites, and anasarca. There was no preternatural dullness in the precordial region; a low, soft bellows-murmur was heard over the aortic valves with the first sound, and another at the base with the diastolic sound. From these signs, regurgitant disease of both mitral and aortic valves was inferred. The patient died a few days after admission, and exhibited the following post-mortem appearances. Both ventricles were dilated, the left also slightly hypertrophied. The mitral valve was less diseased than was expected. On looking at the aortic valves, it was found that a new channel had been formed by an orifice situated immediately below one of the sigmoid valves, the upper outlet of which appeared a little above the same valve. In addition to this, a pouch was formed, which projected into the right auricle.

§ IV.—*Diseases of the Chylopoietic System.*

37. *Acute Glossitis.*—Dr. England,† of Wisbeach, records two cases of idiopathic inflammation of the tongue, a disease which is not of frequent occurrence in this country. The notes of the first case are exceedingly brief, but it appears that the inflammation was developed with great rapidity, rendering articulation and deglutition extremely difficult. It subsided as rapidly, under the local application of a solution of the nitrate of silver of the strength of 15 grains to the ounce of water.

The second case was that of a labouring man, aged 20, who came to Dr. England with his tongue swollen, and his deglutition (except of liquids) much impeded; his articulation was very imperfect. On Friday, August the 14th, his general state of health being good, and without any preliminary rigor, his tongue became suddenly swollen, and increased in volume to such an extent as to produce the above impediments, accompanied with pain and tenderness on pressure. On inspecting the mouth and fauces, the left side of the tongue was found to be swollen, the increased thickness extending throughout its substance, and from the apex to the root. The elevation of the left surface above the right was greater than in the former case, being at least a quarter of an inch above the corresponding right side, beyond the median line, which it seemed to follow symmetrically.

Half a dozen leeches and a blister were ordered to the throat, preceded by an active calomel and jalap purgative; a solution of nitrate of silver (20 grains to the ounce of water) was applied with a camel-hair brush three or four times a day.

As in the former case, the use of the nitrate of silver led to a speedy diminution of the swelling, and when he called upon me on the 20th, two days afterwards, both sides of the tongue were of equal thickness.

A similar case, of greater severity, is recorded by Dr. Hamilton, in the 'Southern Medical and Surgical Journal,' and is copied into the 'Lancet' of October 3d.

38. *Granular Disease of the Pharynx.*—Under this title M. Chomel‡ describes a disease which he believes has attracted but little attention. It appears to consist in an hypertrophy of the mucous follicles of the pharynx, which appear as small, red elevations, and give rise to a sensation of dryness

* Med. Gaz. Aug. 28. † Prov. Med. and Surg. Jour. Sept. 1846. ‡ Gazette Méd. No. 16, 1846.

of the fauces, with hoarseness, and difficulty of swallowing. The affection usually comes on slowly, and excites little uneasiness at first, save from the constant hawking it gives rise to. This sometimes becomes quite sonorous, and is accompanied by involuntary attempts at deglutition, and if the irritation is propagated to the œsophagus, a frequent desire to drink. There is a dryness or itching in the pharynx, and the voice is more or less affected. The expectoration consists of transparent viscous globules, of a slight opaque tinge, or streaked black or slate colour. On examination, we find the pharynx covered with little red points, the size of hemp-seed, but sometimes being much more voluminous. They may be grouped into arabesque-like forms, into little discs, or as nipple-shaped projections. Granules are also usually found upon the palate and uvula, but then they are more discrete. The mucous membrane retains its normal characters.

The course of the disease is always chronic and remitting, it being especially troublesome in cold and damp weather. It never spontaneously disappears, and often obstinately resists treatment. Of 14 cases which M. Chomel had occasion to see, at more or less remote periods after treatment, but 4 remained cured the others being only relieved. The diagnosis of the affection is easy enough, as it obviously consists in hypertrophy of the numerous muciparous follicles of the pharynx. In *treating* the disease, M. Chomel has tried all descriptions of astringent gargles, &c., with but indifferent success, and when it proves obstinate, cauterizing the mucous membrane is the only means likely to prove serviceable, fluid caustics having been found more useful in his hands than solid ones.

39. *Perforation of the Stomach.*—We refer our readers to the case of presumed recovery from perforation of the stomach which we have placed among our abstracts (art. 22), as one of extreme interest and importance, both in respect of the rarity of such a termination, and in reference to the well-devised treatment to which the patient was subjected, and to which the fortunate recovery must indubitably be attributed. It cannot fail to strike the reader how different was the treatment in the case referred to, from that generally adopted. A patient whose stomach has been perforated, is suddenly seized with severe pain, and becomes severely collapsed, with a cold moist skin, contracted or almost obliterated pulse, and what is commonly done in such a case? The first resource generally adopted is the exhibition of brandy, or brandy-and-water, with ammonia, or other stimulating remedies; the consequence is, that these fluids pour through the aperture in the stomach into the peritoneal cavity, and give an irreparable addition to the symptoms they were intended to obviate. The impropriety of exhibiting stimulants in a case of probable perforation of the stomach, therefore, cannot be questioned. Fortunately for the subject of the case referred to, the nature of the lesion was at once suspected, and a judicious and scientific line of treatment adopted. This consisted in the exhibition of opium in large doses, and total abstinence from food of any kind for a time, and the subsequent admission of such quantities only as could barely sustain life. The subsequent history of the woman who died of a second rupture, adds materially to the interest of the case.

A second cure, in many respects similar to the above, is recorded by Mr. Ormerod;* but the recovery in this instance was not so decided, as the original perforation had given rise to inflammation, which had divided the abdominal cavity into two sacs, one of which nearest the stomach was at the time of death filled with pus. It can only be said of this case that the fatal event was postponed for some months, instead of taking place, as is usually

* Lancet, Oct. 17.

the case, in less than twenty-four hours. Death in this case was caused by second perforation.

40. *Perforation of the Duodenum.*—Two instances of this accident have recently been recorded, one by Mr. Stillwell,* the other by Mr. Ormerod.† The first case was that of a gentleman who had complained of dyspeptic symptoms for some time, but which were not so severe as to induce him to leave his business. He was suddenly seized with the well-known symptoms of perforation of the alimentary canal. *Stimulants* were exhibited without effect. After death an opening was found in the duodenum near the pylorus, having the thickened borders of the chronic ulcer. The various liquids which had been exhibited were found in the abdominal cavity.

The history of the second case is not known further than that the patient, also a man, had suffered great privations. There is nothing worthy of remark either in the symptoms or post-mortem appearances.

41. *Œdema of the Liver.*—A specimen of this appearance of the liver, which as it is not alluded to by many systematic writers must be considered rare, was lately exhibited to the members of the Manchester Pathological Society by Dr. Francis. The liver possessed the following characters. The whole organ was considerably enlarged, and of a dark fawn colour, its anterior margin was rounded and thickened, but the peritoneal coat was unaltered. The organ pitted on pressure like an anasarcous limb. The lobules were enlarged to double their usual size, and resembled ordinary cellular tissue infiltrated with serum. The patient was a man, aged 50, affected with Bright's disease.‡

42. *Icterus.*—This disease is the subject of a comprehensive treatise by Dr. Horaczek,§ of which an analytical notice appears in the 'British and Foreign Review,' October 1846. The author objects to the term icterus, and proposes that of "cholosis, or bilious dyscrasia." The disease is divided into—1st, idiopathic or primary cholosis; 2d, symptomatic or secondary cholosis, and polycholosis, or the superabundant formation of the constituents of the bile, and their accumulation in the blood from inactivity of the secreting function of the liver.

Primary cholosis is stated by the author to consist in a diseased composition of the blood, with coexisting disturbance or suspension of the hepatic functions. The anatomical characters of the disease are various, the most constant being a diminution of the organ with that change of texture which he calls *acute yellow atrophy.*

Secondary cholosis is the resumption of the bile into the blood after it has been secreted, and depends upon the structural changes in the liver itself or the neighbouring organs.

In the first form, the blood is considerably altered, and coagulates feebly from a diminution in fibrin; the blood-corpuscles are also fewer in number, and often disintegrated. The serum is of a deep yellow colour, and viscid. The liver is pale, and has lost its granular aspect. The gall-bladder is contracted, and contains an unhealthy mucous fluid. The mucous membranes generally are softened. Among the occasional complications of this form of jaundice, the author mentions congestion of the lungs, formation of coagula in the portal veins, and secondary abscesses.

The general symptoms are thus described: the fever is not high in general, and has irregular intermissions; the disease sometimes commences with tetanic or epileptic convulsions, or even with apoplectic symptoms. In such cases the fever is of a more strictly inflammatory type. The yellow discoloration of the

* Lancet, July 18, 1846. † Ibid. Oct. 17, 1846. ‡ Med. Gaz. July 3, 1846.

§ Die Gallige Dyscrasie mit acuter gelber Atrophie der Leber, 1844.,

skin sometimes extends over the whole body in a few hours, and at the same time tinges all the internal textures with the exception, as stated by the author, of the brain and enamel of the teeth. Among other symptoms, a pain in the eighth and ninth dorsal vertebræ is particularly mentioned. There is also violent vomiting. In the advanced stages, cephalic symptoms supervene, and the patient dies comatose.

The diagnosis of this form of jaundice is not easy, as it is readily confounded with the secondary form, and the author's rules for the distinction are not very decided. In the treatment he is more succinct. Our main object should be to excite the action of the liver, for which purpose he prefers rhubarb and aloes in full doses. He objects to the continued use of calomel, as he maintains that it tends to diminish the fibrin of the blood. For the same reason saline aperients are contraindicated.

The remaining forms of the disease are not included in the present volume.

43. *The Tongue in functional Diseases of the Stomach and Bowels.*—A second edition of Dr. Williams's work on the morbid appearances of the tongue as indicative of deranged states of the alimentary canal has recently appeared, and we regret that the late period at which it has reached us precludes our giving more than a hasty notice of its contents. We may state, however, that the different conditions of the papillary, structural, and general aspect of the tongue are very minutely investigated, and their connexion with certain functional symptoms traced out by the analysis of a large number of cases. Those who regard such very close inspections of the tongue as of importance in the appreciation of disease of the abdominal viscera, will find in Dr. Williams's work all the assistance which they can possibly require; our own opinion is inclined to scepticism as to the diagnostic value of the minute shades of difference which the author has so laboriously studied.*

§ V.—*Diseases of the Genito-Urinary System.*

The communications on the diseases of the genito-urinary organs which have recently appeared, exclusive of those which will be found among our Extracts, are of so unimportant a character, that we shall defer their consideration to our next Report, when we shall have had an opportunity of perusing one or two original papers on subjects relating to this section, of which only very imperfect abstracts have, as yet, been given in the weekly journals.

We shall here, however, call our readers' attention to a second and improved edition of Dr. Golding Bird's excellent treatise on 'Urinary Deposits;' the first appearance of which was noticed at some length in our first Volume (pp. 45, 209). The general appearance of the work is much the same as in the first edition, but some additions have been made, which were rendered necessary by the subsequent advance of pathological chemistry; and an introductory chapter has been added, containing certain preliminary details connected with the chemistry of the urine, which will much facilitate the study of the pathology of that fluid.

§ VI.—*Diseases of Uncertain or Variable Seat.*

44. *Scrofula.*—We have, in the present Report, to notice the appearance of a work on the pathology and treatment of this disease, by Dr. Glover, of Newcastle, to which the Fothergillian prize was awarded for the year 1846. As was the case with Mr. Phillips's treatise, noticed in our last Volume, Dr. Glover's work contains the results of original observation, the author having wisely abstained from drawing more largely from the writings of his predecessors than is ne-

* Essay on the Tongue in Functional Derangement of the Stomach and Bowels. Lond. 1846. 2d edit.

cessary to give completeness to his subject. In the cursory analysis of the contents of this volume which we shall now proceed to lay before our readers, we shall take in succession the several chapters of which it is composed.

Chapter I. *Description of scrofulous or tuberculous matter.*—The author, in this chapter, takes occasion to express his adoption, in the fullest manner, of the statement of Lugol, that tubercle is the essential element of scrofula. The question of the vascularity of the product, and its title to be ranked among true cell-formations, is also considered, and the opinions of Scherer, Vogel, and others, adduced in proof that it is a strictly amorphous matter, and that vascularity is a non-essential condition. His own observations, which for the most part, coincide with those of Lebert, Bennett, and Dalrymple, are elsewhere mentioned. (Vide *supra*, p. 223.) In the second section of this chapter we have a minute history of the chemical composition of tubercle, the value of which is much enhanced by a considerable number of original analyses; but as this part of the work will be mentioned in our next 'Chemical Report,' we shall not here make further allusion to it.

Chapter II. *Humoral pathology of scrofula.*—The blood of scrofulous patients has been recently examined by several chemists, as will be seen by a reference to Dr. Day's Report on Chemistry. (Half-yearly Abstract, Vol. II, and Vol. III, p. 310.) Dr. Glover adds eighteen original analyses; twelve of males, and six of females. These, however, as well as his observations on the lymph and chyle, gastric and urinary secretions, will also more properly be included in a subsequent report.

Chapter III. *On the scrofulous diathesis.*—This chapter is chiefly occupied by a description of the external characteristics of the strumous habit, compiled from Hufeland, Le Pelletier, Lugol, and others. The author's original observations are chiefly made in reference to the complexion and colour of the hair, but are too few in number to allow of any trustworthy deductions.

Chapter IV. *Comparative pathology of scrofula.*—This chapter is almost entirely drawn from Rayer's essay in the 'Archives de Médecine Comparée, Nos. 4 and 5. Reference is also made to the researches of Heusinger, Dupuy, and Newport.

Chapter V. *Identity of scrofulous and tuberculous diseases.*—Dr. Glover adds another to the numerous supporters of the opinion that the scrofulous and tubercular habits are one and the same; in which he differs, as will be remembered, from Mr. Phillips, the author of the last publication upon the subject. The great argument used upon this occasion is derived from the entire similarity of diseased products in the two classes of affections—a similarity, observes Dr. Glover, so great, that those who advocate a different opinion cannot point out any difference between tubercle and scrofulous matter which may not be accounted for by the diversity in structure of the tissues in which the deposit may be placed. Microscopical and chemical analysis fail in establishing any essential difference; the characters of the blood are the same, the two affections are frequently united in the same individual, take a similar course, and are relieved by a similar treatment—reasons sufficient, it must be allowed, for the author's allegiance to the more general opinion.

Chapter VI. *Essential nature of scrofula.*—The author's belief with regard to this obscure point is to the effect that scrofula, that is to say, the actual manifestation of the disease, not the diathesis, is a peculiar modification of inflammation, in which the normal products of this process are not evolved, but instead of them a lower form of material, which is incapable of passing into regular cell-forms. The cause of this difference in the effused product is left still undecided, as inexplicable either with the aid of the microscope or of chemical science. It must, however, be understood that Dr. Glover gives greater

extension to the term inflammation than is usually done; agreeing with Dr. Bennett, that its essential phenomenon is increased exudation of blood-plasma.

[We regret to find (although the fact is far from unexpected) that Dr. Glover advances no nearer to the proximate cause of scrofula than his predecessors have done. Whether scrofulous, i. e. tubercular matter, is deposited by that action of the capillaries, in common parlance termed inflammation, or whether it is evolved in that action of the vessels which is in a healthy condition a nutritive action, is a matter of comparatively little importance, as it would appear that these are, to a certain extent, analogous actions, blood-plasma being effused in both, but in different quantities, relatively to the necessities of the organism. What we want to know is what produces that state of blood which gives rise to cacoplastic effusions. Is it a fault of assimilation? if so, what is the cause of the error?]

Chapter VII. *Exciting cause of scrofula.*—The most potent and general of these is properly allowed by Dr. Glover to be hereditary transmission, the influence of which he admits almost as extensively as Lugol. He at the same time fully admits the influence of anti-hygienic conditions, the power of which to produce scrofula in a previously healthy subject Lugol* emphatically denies.

Chapter VIII is occupied with the modifications and complications of scrofula, in the consideration of which the author denies the scrofulous origin of many diseases commonly so called, such as the chronic ophthalmia, &c.

Chapter IX. *Treatment.*—This is, as usual, general and medicinal; in the former of these there is no proposition to be found which has not been inculcated in every work upon the subject. Among medicinal agents iodine is, in our opinion, justly appreciated by Dr. Glover; he also entertains very favorable opinions of bromine, which he thinks might be advantageously substituted for iodine, especially in external use. In speaking of the dose of iodine, he pronounces for a medium system, and the formula of the Pharmacopœia, the compound tincture. The effects of this medicine upon the quantity of the urine, and its reappearance in that secretion, are exhibited in several analyses made for the purpose of determining the point. The cod-liver oil has been used by Dr. Glover with considerable effect, but his experience of its action has not as yet been extensive.

Dr. Glover concludes his labours with the narration of several cases, but in these we find nothing to remark upon; the treatment being that usually followed in similar cases, with the exception that the bromine is occasionally used externally.

45. *Iodureted Injections in Scrofulous Abscesses.*—M. Lugol† has published further observations on the value of iodine in the treatment of scrofula, and more particularly in reference to the utility of iodureted injections in abscesses and fistulous tracks. The solution employed by him for this purpose is his rubefacient preparation (iodinii ℈ss, potass. iodidi ℈j, and aquæ ℈vj), diluted until it assumes a pale mahogany colour.

46. *New Compound of Chlorine, Iodine, and Mercury, in Scrofula.*—M. Rochard‡ has communicated to the Académie des Sciences, Paris, a paper entitled 'Trial of a New Compound of Chlorine, Iodine, and Mercury, in the treatment of Scrofulous Affections.'

The author reports a considerable number of cases, the results of which seem to him to prove that this composition, which M. Boutigni has made known, and designated by the name of "*iodhydrargirite de chlorure mercureux*," exercises an efficient action in scrofulous affections of the most serious character, and also in inveterate cutaneous diseases. He states that, after having

* Researches on the Causes of Scrofulous Diseases. Lond. 1845.

† Gaz. Med. Sept. 7, 12, &c. ‡ Prov. Med. Journ. June 3, 1846, from Gaz. Méd.

obtained some rapid cures in psoriasis, lichen, chronic eczema, herpes, maculæ, &c., the idea occurred to him of extending its employment to the treatment of scrofula. He cites, amongst others, some successful cases of white swelling with caries and fistulous canals; of numerous enlarged indurated or ulcerated ganglia; of chronic ophthalmia, complicated with ulcerating keratitis; of ulcerated lupus; of goitre; and finally, of large scrofulous abscesses, succeeding to an anti-syphilitic treatment. In these several cases the action of the remedy was quick and permanent, though varying in the various forms of the diseases. M. Rochard employs the medicine externally in the form of ointment.

47. *Phosphate of Ammonia in Gout and Rheumatism.*—Dr. Buckler,* of Baltimore (U. S.), has used the phosphate of ammonia with great success in both the above diseases. He was led to its exhibition by the reflection that these diseases might depend upon the existence of lithic acid in the blood as an insoluble compound with lime or soda, in consequence of which it would neither be eliminated by the skin nor kidneys. It occurred to him, therefore, that if a medicine could be found which was capable of decomposing the insoluble lithates, and forming in their stead two soluble salts, that the gouty or rheumatic inflammation would subside. Such a medicine presents itself in the phosphate of ammonia, and Dr. Buckler accordingly tested its capabilities, both in gout and rheumatism, with results which have induced him to form a very favorable opinion of its efficacy.

It must be stated, however, that, in the hands of other practitioners, the phosphate of ammonia has not been found deserving of the character given it by the last-mentioned writer. Dr. Reuchtenbacher† denies that it has any power whatever in the diseases in question, and Dr. Voight ‡ even considers its exhibition as hazardous. The latter states that he has seen a series of alarming symptoms arise from a dose of only 3 grains. It is not very clear, however, that the symptoms which he describes were in reality due to the medicine; and even if they were so, the probability is that some peculiar idiosyncrasy in the patient's constitution was the occasion of the accident. It can scarcely be imagined that Dr. Buckler would have failed to meet with some similar cases, had the symptoms been due to the poisonous action of the medicine.

In concluding this Report, we shall mention the titles of a few valuable communications, of which we have not space to give a more detailed account.

1. A collection of facts illustrative of the morbid conditions of the pulmonary artery, &c., by Dr. Norman Chevers. (Med. Gazette, September and October: *not completed.*)
2. On the nature and principles of treatment of inflammation, and allied disorders of the circulation, by Dr Robinson. (Med. Gazette, September and October: *not completed.*)
3. Reflections and observations on insanity, by Dr. Williams. (Medical Times, October and November.)
4. On mollities ossium, by Mr. Dalrymple. (Dublin Quarterly Journal of Medical Science, August.)
5. On the parallelism of diseases, by Dr. Harden. (American Journal of the Medical Sciences, July.)
6. Considerations pratiques sur les causes, &c. des gaz développés dans les voies digestives, par M. Latour. (Bulletin de Thérapeutique, Juin, 1846.)
7. Nouvelles recherches sur la paralysie générale, par M. Blot. (Gazette des Hôpitaux, No. 80: incomplète.)
8. Recherches sur les calculs salivaires, par M. Stanski. (Archives Gén., Oct.)
9. Observations d'abscès tuberculeux du pancreas, &c. (Ib. September.)

* Amer. Journ. Med. Sciences, Jan. 1846. † Philadelph. Med. Exam. June 1846.
‡ Ib. May 1846.

II.

REPORT ON THE PROGRESS OF SURGERY.

BY HENRY ANCELL, ESQ., M.R.C.S.

The translation of Vogel's 'Pathological Anatomy of the Human Body,' by Dr. Day, has been noticed in detail in the 'Report on General Pathology.' The work is one of that class which must exercise an influence, however slowly and imperceptibly, still decidedly, over the progress of surgical science. The surgeon who is a mere operator, will perhaps receive a work of this description with indifference; to any such we apply the author's remark, that "it is an error, and an indication of little intelligence, to regard the practical as the only important part of medicine, and the scientific as a mere superfluous decoration,—as a brilliant but useless ornament." The routine practitioner, who disdains the tedious but safe and satisfactory path of minute inquiry and cautious deduction, will probably look for the immediate practical application of these investigations. To any such, we again apply the words of Vogel, that we are not to be "led away by the phrases 'practical views' and 'medical experience,' terms of common use, and too often conveying an erroneous impression." *

The object of this branch of science, and of this work in particular, is to communicate information respecting the material changes in the different parts of the body which accompany or produce symptoms; and it contains facts and observations on serous and fibrinous effusions, on the quantity and qualities of the blood, on organized and unorganized pathological epigeneses, relating to those finer modifications visible only with the microscope—including genuine and spurious pus, morbid tissue, the structure of tumours, and of calculi and other concretions, which are of the utmost importance in the elucidation of surgical disease. There can be no doubt that the resources of pathological anatomy and chemistry applied accurately to the subjects comprised in the various sections of our present Volume, for instance, would throw much light on the nature of the various diseases, would correct many errors in theory, and would superinduce great practical improvements in our methods of treatment.

§ I. *On Injuries and Diseases of Arteries and Veins.*

The 'Medico-Chirurgical Transactions' for the present year, came to hand just as our 'Report' was going to press. The work contains several interesting surgical papers. Among them we find a "Case of punctured wound and ligature of the posterior tibial artery," by Mr. Arnott.† A case in which this artery was tied successfully, by Dr. Hall, who cut down upon the vessel

* Introduction, p. 3. † P. 43.

through the muscles of the calf, was given in our last Volume ;* and we stated the objections that have been made to this proceeding. Mr. Arnott confirms the propriety of the practice, his opinion being, that when the artery requires to be tied high up, the easiest mode will be by cutting directly through the muscles of the calf, instead of by incision at the edge of the tibia. The present volume of the Society's 'Transactions' also contains some cases by Mr. Curling,† of varicocele treated by pressure. As we have reported so fully on this subject, on former occasions,‡ it is only necessary to state, that firm, steady, and continued pressure on the spermatic veins, at the external abdominal ring, by means of the moc-main lever truss, succeeded in curing the disease in from seven to nineteen months, in some cases, and in relieving it in others.

The 'Transactions' also embrace Mr. Liston's account of the case of the late Mr. Seton, detailed in our second Volume,‖ with remarks on wounded arteries, secondary hemorrhage, and false aneurism.§ Mr. Liston states, that in this case the principle of tying the artery where wounded (a principle which has been accepted as an established one, and is recapitulated as such in an article in our extracts (91), from a work recently published by Mr. Guthrie) could not be carried out with propriety, as the cyst could not have been opened without great loss of blood. Mr. Liston relates several cases, to show that many exceptions occur to the general rule of practice, and we also observe that the reviewer of Mr. Guthrie's work, in the 'Monthly Journal,'¶ entertains views somewhat opposed to those of the author on the subject. He maintains that exceptions must occasionally be made, and that cases may occur where the choice lies between the performance of the Hunterian operation and amputation; ligature of the divided ends being inapplicable from peculiar circumstances, arising principally from the manner in which the injury has been inflicted, the condition of the artery in the neighbourhood of the wound, and of the adjacent soft parts, which may be in a state of ulceration or sloughing. The reviewer remarks, that instances might be cited where the Hunterian operation proved successful in finally arresting hemorrhage from an external opening at a distant part of the artery, and again affirms that cases occasionally occur where the application of a single ligature above the wound, as in the operation for aneurism, is the most judicious course to be pursued.

1. *a. Ligature of the Common Carotid.*—Our last Report on this subject embraced three cases, the whole of which proved fatal (Vol. II, p. 266). The following facts are upon the whole more favorable, although, it must be confessed, they tend to the conclusion that our knowledge is defective as respects the influence which the operation produces on the structure and functions of the brain. In one case Dr. Blackman tied the common carotid for a *fungoid tumour of the neck.*** The fungus had an opening in its centre, which extended to the sheath of the artery, and it discharged about a pint daily of the most offensive bloody matter. This had continued for nine weeks, and the patient's strength was nearly exhausted. The operation was performed without difficulty; in less than an hour afterwards the tumour became cold, the discharge ceased, and by the second day it was obvious that the whole mass would soon slough. The patient, however, became *paralytic on the opposite side*, and ultimately comatose, and died on the eighth day after the operation. Dr. Blackman remarks that the season was most unfavorable to the case, the thermometer ranging about 95° Fahr., and that had the opera-

* Abstract, Vol. III, p. 115. † P. 259. ‡ Abstract, Vol. II, p. 276; Vol. III, p. 108. § Ibid. p. 146. ‖ Ibid. p. 107. ¶ Oct. 1846. ** Amer. Journ. of the Med. Sciences, Oct. 1845, p 333.

tion been performed earlier, and under more favorable circumstances, he sincerely believes that even if the patient had not been cured, his life would have been considerably prolonged. Again, Mr. Vincent has published two cases of disease of the brain following the application of a ligature to this artery.* In the first, the operation was performed for the cure of an aneurism; the man became paralytic on the opposite side; he was bled very copiously, and, after death, the brain was found quite soft and cream-like, on the side on which the operation was performed. In the second case, the operation was performed in consequence of an injury to the artery; the patient became paralytic on the opposite side, and, even during the operation, he was observed not to move his extremities on that side. After death, the veins on the same side, within the skull, were only partially filled; there was effusion of serum beneath the arachnoid, and the convolutions of the cerebrum were flattened and softened. Mr. Vincent makes no comment on these cases.

The following case of aneurism of the carotid artery, recorded by G. White, Esq., surgeon to the General Hospital, Nottingham, is possessed of considerable interest.† It being considered practicable and expedient to deligate the common carotid below the tumour, before the operation, at the suggestion of Mr. Sibson, the patient was desired to exhale completely, and to keep his chest as empty as possible; the upper part of the chest was then closely surrounded with a very long, firm bandage, and he was instructed to respire as much as practicable by the diaphragm and abdominal muscles. By this means the length of the neck was materially increased, and the cervical veins were prevented from being alternately distended and emptied. Mr. White considers the operation was thus very much facilitated. At the commencement of the operation, it was found necessary to place two ligatures upon a large vein, and to divide the vessel between them. Formidable hemorrhage took place immediately after the separation of the ligature of the artery, but was easily arrested. Mr. White considers that it probably came from the portion of the artery connected with the tumour, and, he observes, that the case proves the practicability of successfully placing a ligature on a large arterial trunk, *very near its origin.*

Mr. Yates, of Nottingham,‡ on this case observes, that there is no other well-authenticated instance of recovery after deligation of the common carotid, under similar circumstances, although the operation has been performed more than once or twice; that, in such cases, hemorrhage on separation of the ligature is the cause of death; and although recovery took place, it is not unreasonable to expect that hemorrhage will always occur when a similar operation is performed for a similar disease, under the same conditions; because, in nearly every instance of spontaneous aneurism, the vessel is diseased to some extent, both above and below the tumour; and on account of the danger of placing a ligature upon a diseased vessel; and further, that where there is no greater space than an inch or so between the aneurismal sac above, and the clavicle and upper margin of the sternum below, bleeding is almost sure to follow an operation of this kind; and even if the vessel were healthy, it is questionable whether the force of the circulation would not wash away any clot that might be forming within an inch of its fellow trunk, the subclavian artery. These observations are contradicted by the instance of the carotid being tied successfully within the eighth part of an inch of the innominata, by Mr. Porter, and by the fact that Dr. Robinson, of Edinburgh, with equal success, cured an aneurism occupying nearly the entire side of the neck,

* Med. Chirurg. Trans. vol. xxv, p. 37. † Lancet, Feb. 7, 1846, p. 149.

‡ Lancet, March 14, 1846, p. 293.

when it was with the greatest difficulty that he could find space between the disease and the sternum to expose the root of the carotid.*

Mr. Yates further remarks, that whether the bleeding proceeded from the proximal end of the artery, or issued out of the tumour by a retrograde movement, is a matter of the greatest moment. One end of the artery could not have been closed at the time of the hemorrhage, and reason would lead us to suppose the end nearest the heart was that one, since it had to bear the greatest impulse of the heart's action, and the force of a heavy column of blood, which must almost necessarily prevent the formation of a coagulum sufficiently large and firm to close up the vessel; that the tumour, in Mr. White's case, became hard, which must have arisen from coagulation, and it is not reasonable to believe that at the same time hemorrhage took place from the end of the artery attached to the tumour. But Mr. Fergusson† states that this opinion—that secondary hemorrhage always occurs from the proximal end of the vessel—is losing ground, and it is now believed that the occurrence happens as frequently, if not more so, from the distal side of the seat of ligature, and that post-mortem examination favours this view.

M. Triboli ‡ tied the common carotid in a man, aged 27, in consequence of a wound near the angle of the jaw. The hemorrhage was arrested in the first instance by syncope, and did not return until towards the end of the tenth day. Two ligatures were employed—one with which the artery was tied, the other a little lower than the first, which was left in its place, to be used in case of emergency. Both ligatures came away the eighth day after the operation, and the case did well.

M. Triboli was aware that in placing the second ligature round the artery he was deviating from the ordinary practice, and he does not appear to have given any very good reason for doing so; two days after the ligatures came away hemorrhage occurred, and returned repeatedly for two or three days.

Mr. Liston lays the greatest stress upon the impropriety, in this operation, of disturbing the vessel by detaching it from its sheath, or breaking up its fine cellular connexions further than is barely sufficient for the passage of the needle, and upon the disadvantage of applying more than one ligature; but he admits, as an exception, that two ligatures should always be used when, by any awkwardness, the vessel has been much disturbed from its cellular connexion.§

b. Ligature of both Carotids.—Notwithstanding the occurrence of disease of the brain consecutive to ligature of the common carotid, in two if not three of the cases above cited, the proof is now established, without any room for doubt, that *both carotids* may be tied in the human subject, without destruction to life. Our work contains the account of two important cases, one of which will be found in the third Volume (p. 127), and the other in the present Volume (p. 110). The patient survived after the performance of both operations, and Dr. Warren remarks, that a case under Dr. Mussey in America, in 1827, and two or three in other countries, go far to prove the practicability and safety of the proceeding. Of the cases referred to by Dr. Warren, one was by Maggill, who, within a month, tied both carotids for tumours of both eyes, the patient doing well, and the tumours having subsided, several months after the operation.‖ The chief precaution necessary is, that sufficient time should elapse between the ligature of the two vessels to allow the collateral vessels which supply the brain to dilate. In Dr. Mussey's case, an interval of six weeks was allowed. The operation was resorted to on account of inosculating arterial swellings,

* Fergusson's Practical Surgery, 1846, p. 448. † Lib cit. p. 448.
‡ Gaz. Méd. de Paris, from Il Raccoglitore Medico. § Practical Surg. 1846, p. 187
‖ South's notes to Chelius

and the case recovered. Thus we have at least four successful cases of this remarkable double operation.

2. *Cure of Aneurism by Galvanism.*—Our extracts contain a case of popliteal aneurism in which this method was adopted by Dr. Ciniselli. From a subsequent communication, it appears that a little more than four months after the operation Dr. Ciniselli was surprised to find that the circulation of the blood had been re-established in the artery under the aneurism, the latter being raised *en masse* at each arterial diastole, no *expansive* pulsation being detected proper to the tumour,—which was converted into a hard solid swelling, of the size of a large walnut.

The 'Medical Times'* states that this is the eighth case in which the method of galvano-puncture has been employed. We furnished our readers with an interesting article on the subject in our Third Volume (p. 125); but, as remarked by our contemporary, sufficient time has not elapsed to permit us to form a positive opinion as to the real value of the new operation; the objections urged against it are 1, that gangrene of the skin has been already three times produced by the action of the galvanic fluid; and, 2, in M. Petrequin's case of brachial aneurism, and in two of the cases of popliteal tumour, the arteries do not appear to have been permanently obliterated; a circumstance which must of course warrant a certain degree of anxiety as to the solidity of the cure.

§ II.—*Injuries and Diseases of the Brain and Nervous System.*

3. *Tumours of the Head analogous to Spina Bifida.*—We have two cases of this nature before us, in which a similar mode of treatment was adopted with similar results, both proving fatal.

The first is by Dr. Gilman Davies,† who was invited on Thursday, December 25th, 1845, by Dr. Gilman, to see a female infant, born on the previous Monday. The child was well formed; the head was not enlarged, and the fontanelles were well closed. On the occiput was a globular tumour, about two inches and a half in diameter, covered by healthy integument, and having a diameter of about half an inch at its attachment to the occipital bone. The tumour was very tense, and contained fluid. Upon grasping it firmly, and using gradual pressure, there was no apparent receding of the contained fluid, and no effect produced upon the sensorium. There was no other malformation. The child nursed well, and its excretions were natural.

Inferring that there was no communication between the sac and the cranial cavity, the tumour was punctured with a lancet, and half a pint of serous fluid discharged; the sac collapsed, and no effect was produced on the child by the evacuation of its contents. On the following Sunday the sac was again opened, and a gill of fluid discharged. On the Wednesday following the tumour burst at one of the previous openings. On Friday, January 2d, a seton, made of two silken threads, was inserted; the sac, which was well distended, being nearly emptied through the incision. Serous fluid continued to ooze for several successive days, but in greatly diminished quantity, till three days before death, when little else than offensive pus in very small quantities was discharged.

For the first week the child seemed well. After that period symptoms indicating cerebral disturbance occurred. Convulsive movements soon followed, and on Tuesday, January 5th, strong convulsion, with great distortion of the face. On the following day another, and again on Thursday morning, which

* Oct. 10, 1846. † The Boston Med. and Surg. Journ. March 4, 1846.

was repeated every hour through the day. The convulsions continued with increased frequency through Friday and Saturday, occurring every ten minutes during the latter day, till 8 o'clock in the evening, when the child expired.

On post-mortem examination the cranial bones were found firmly united, and the fontanelles unusually small. The membranes were dry. The vessels of the sub-arachnoid cellular tissue were deeply injected. There was no appearance of serous or puriform fluid around the cerebrum or cerebellum. The brain itself was pale, and softer than natural, especially in the neighbourhood of the ventricles, including the septum lucidum, fornix, and adjacent parts. The ventricles were filled with a thin, inodorous, puriform fluid; and in each lateral ventricle was a mass, about ten lines in length and four in width, of coagulated albumen. There was no communication between the membranous cavity of the brain and the ventricles; the thin flooring of the fourth ventricle remaining entire. The walls of the tumour, composed of integument, and lined with dura mater, were corrugated, dry, and pale. The opening into the cranial cavity was two lines below the transverse ridge of the occipital bone; it was circular, and two lines in diameter; the ossification around it being perfect. Attached to this opening on two sides, by a membrane, was a pyriform, fleshy, and perfectly solid body, about eleven lines in length, and four in diameter at its thickest part. The neck projected far into the cranial aperture, and permitted of a slight motion out and in, but not so as to be entirely withdrawn from the opening. It acted, consequently, like a bullet valve, permitting the egress of fluid from the cranial cavity, but closing the opening effectually against any return. This fully accounted for the impossibility of pressing out the contents of the sac at the first examination, and the consequent absence of any effect thereby produced upon the child. Had there been any yielding of the tumour under pressure, any symptom of cerebral disturbance produced by these manipulations, the tumour would not have been interfered with. Dr. Davies observes that he does not remember to have met with any description of a case like this, in its curious valve.

The second case is by Dr. Barclay.* The child, Elizabeth Ginns, was taken to Dr. Barclay when about a fortnight old, with a large tumour like a bladder, nearly filled with water, on the back part of its head and neck. He examined it again on the 23d of March with Mr. Derington. The child, now eight weeks old, presented a most singular appearance, particularly in the erect posture; a large vascular bag filled with fluid, and nearly the size of the head, hung from the occiput, and by its weight, though it partly rested on the shoulders, the cervical vertebræ were considerably displaced, and the head drawn backwards. The pedicle by which this bag was attached was extremely short and flat, about an inch in width and a line in thickness, to the feel like a fold of skin, and only in the centre appearing to have any connexion with the cranium, over which it was moveable, except at this point, No perforation nor imperfection in the bone could be detected; and when very considerable pressure was exerted on the bag, no effect was produced on the child. Six ounces of clear yellow serum were drawn off; the child seemed relieved, and it now had the appearance of a wrinkled empty scrotum hung on to the occiput. In three days it was found to have filled again, and on the 30th of March Mr. Derington passed a double ligature of strong silk twice through the flat pedicle, tied the loops on either side, and the remaining one in the centre, with very considerable force, though not sufficient to strangulate it completely; about three ounces of fluid similar to the former were evacuated. On the next day the ligatures were tightened, and on the fourth day, the pedicle being partly ulce-

* Prov. Med. and Surg. Journ. May 13, 1846, p. 215.

rated through, fresh ones were applied, so as to strangulate the sac completely. Two days afterwards (April 5th) it had sloughed, and was so offensive that Mr. Derington removed it close to the ligatures, and it appeared lined internally with a glistening membrane. The child looked well and healthy on the 6th, and as the administration of "Godfrey" had been discovered and strictly prohibited, it put on a thriving appearance. On the 7th a poultice was ordered to bring away the ligatures, but the next afternoon, April 8th, the child was seized with convulsions, and died the same evening, with all the symptoms of effusion within the cranium.

Autopsy.—About a line above the tubercle of the os occipitis was a foramen about the size of a crow-quill, giving passage to a cord like the vas deferens. It did not appear pervious, but a single probe could be passed obliquely downwards through the foramen, quite to the posterior part of the medulla oblongata. On reflecting the occipital bone, the channel was seen to be connected with the dura mater. The brain and its membranes were loaded with serum, which flowed in considerable quantity from an incision penetrating to the ventricles.

The obliquity of the foramen in the bone, and the very small communication with the membranes of the brain or spinal cord, probably prevented any effect on the brain by compression of the sac. Had Nature been left to herself, the child might have survived for a longer period—an object of wonder to the neighbourhood and aversion to its parents; but it appears, Dr. Barclay remarks, to have been as fair a case for an attempt at removal of such growths as is likely to be met with, even supposing the diagnosis to have been much more distinct.

4. *Epilepsy treated by Trephining.*—At La Pitié M. Bérard trephined a patient for epilepsy, connected with a depression of the bones of the cranium, of eleven years' standing. After the operation the patient had three attacks daily, and then two, but without loss of consciousness, while before the operation this was entirely lost. The reporter observes that time only can determine the ultimate result.*

§ III.—*Injuries and Diseases of the Abdomen and its Contents.*

5. *Hernia.*—C. H. Törnroth, a Danish surgeon, has lately performed M. Gerdy's operation for the radical cure. (Abstract, Vol. III, pp. 121, 219.) After the invagination this surgeon introduces one ligature only, composed of eight or ten silk threads, to one end of which is tied a pledget of lint, corresponding to the size of the sac. The needle, armed with the ligature, is thrust through the highest point of the invaginated portion, and accordingly penetrates the external oblique muscle and the integuments. It is then tied firmly on a piece of elastic bougie. The invagination must be carried before the cord as high as possible into the inguinal canal, and a truss is to be worn after the operation. C. H. Törnroth has operated on five patients.†

6. *Complicated Hernia.*—The following interesting case, besides its novelty, illustrates the circumstance of the great variety of phenomena which the surgeon has to deal with in the treatment of hernia. A woman, aged 45, for a long time affected with a double crural hernia, entered the Hôpital Necker; the hernia in the right side having been strangulated forty-eight hours. Measures were taken to reduce it, but they proved ineffectual, and there was some indication of a commencing peritonitis. The operation being determined upon, M. Richet incised the skin, then the two layers of the *fascia*

* Gaz. des Hôpitaux, April 11, 1846. † Zeitschrift für die gesammte Medicin.

superficialis; this brought into view a pouch having all the appearance of the hernial sac, and taken for it by the assistants. This was cut into and the true sac exposed, which, in its turn, was taken for the intestine by the persons present. The first pouch was the *fascia tranversalis*, pushed forwards by the displaced intestine, and, like the true sac, presenting a fundus and neck. The true sac was divided, and a small quantity of serum escaped. The peritoneum was considerably thickened; the stricture was so tight that a blunt-pointed bistoury could not be forced between it and the intestine. It was divided below, vertically, with blunt scissors, the division being effected parallel to the saphena vein, and internally as respects it, without touching either the crural ring or Gimbernat's ligament, but on the cribriform plate, the border of one of the laminæ of which produced the strangulation. There was no reason against returning the intestine; which was accordingly done. The symptoms subsided, and two stools followed the administration of a purgative lavement. On the following day vomiting returned; the abdomen was tympanitic; pulse small, contracted, and frequent; face injected; and there was slight delirium. The other hernia, on the left side, was strangulated. M. Richet, with some difficulty, reduced this second incarcerated hernia, and preseribed ice, leeches to the abdomen, and a tobacco injection. On the following day the patient died, without having had any further evacuation.

On post-mortem examination there was found inflammation of the pelvic peritoneum. The intestine which was strangulated in the second instance, probably in the hospital, had a circular mark of the constricted part. The hernia operated upon had inclosed a small complete noose, which was found, as usual, immediately behind the ring. On passing the finger over the external surface of the intestine, a strong ring was felt, as if the coats were thickened, but there was no thickening; it was produced by the following singular circumstance:

On the interior of the intestine, a little above the seat of the stricture, a sort of diaphragm, analogous to the pylorie valve, was found. M. Cruveilhier tried to push his finger through it, but did not succeed. This diaphragm was produced by a section of the mucous membrane, which had been turned upwards in the same manner as the internal tunics of arteries after their ligature. The stricture had been strong enough to cut the mucous membrane. Even after death the finger could not pass this species of valve, and the obstacle must have been greater during life, owing to the turgid state of the parts. For about two feet above the strangulation, the small intestine was distended with matters not sufficiently solid to be prevented passing the valve; still it is not to be concluded that they could pass it. During life the obstacle might have been tenfold greater from congestion, which disappears, in great part, with life. This case is interesting in many respects. A woman has two herniæ; one of which becomes strangulated when the other, being already strangulated, has just been operated upon, and the reduction of the former is as inoffensive as the reduction of the latter is fatal; because, in the hernia first reduced, the obstacle to the course of the contents of the bowels persisted after the strangulation, with this difference, that, instead of being seated at the circumference of the intestine, it was seated within its cavity.

M. Richet, and those present, at first attributed the return of the symptoms to the strangulation of the second hernia; but the persistence of the signs of strangulation, after the reduction of the latter, led them to waver, and the autopsy revealed the true and singular cause of their reproduction.*

7. *Paracentesis Abdominis.*—Although a fatal hemorrhage from this operation

* Gazette des Hôpitaux, 15 Juin, 1846.

is by no means unprecedented, it is important that such occurrences should be preserved on record.

Mr. Burford Norman* has described a case where the operation was resorted to for dropsy with morbus cordis, and was followed by this occurrence. The circumstances are these: the abdominal parietes were so much thickened by the œdema, that a full-length trocar scarcely penetrated them; the fluid was, however, after a good deal of trouble, from something obstructing the end of the canula, pretty completely drawn off. Slight bleeding occurred at the time, and it continued during the night to such an extent as to soak through blankets and bed, and to occasion syncope. On removing the covering a somewhat rapid and distinctly arterial flow of blood was detected, and the wound was plugged with sponge, which completely controlled the bleeding. The patient, however, died shortly afterwards; and it was found that the hemorrhage had resulted from the division of a very small branch of the deep epigastric artery, of a calibre not exceeding the size of a common pin, which ran in a slanting course inwards and across the linea alba, towards the epigastric trunk. There was no internal hemorrhage.

Mr. South had the misfortune to meet with a similar accident.† As the water flowed from the abdomen the patient became very faint, but no blood came with it, and wounding the epigastric artery did not cross his mind. The patient sunk gradually, and died within fourteen hours. The abdomen was found to contain four or five pints of blood, and the epigastric artery to have inclined inwards, very soon after its origin from the iliac, running upwards, immediately under the linea alba. Mr. South deviated from the spot in which the patient had previously been tapped; and he is anxious, from this occurrence, to impress that if the operation be performed safely at one spot, it should be again and again done in the same place, if required, even twenty times.

Mr. South further states that bleeding may occur after tapping in three ways: 1, by wounding an intestine, when the blood escapes, mingled with the water; 2, by rent of the blood-vessels after the quick removal of the pressure, when the water, towards the end of the operation, is tinged with blood; 3, by wounding an artery, when the blood appears after the removal of the canula, or it may be pressed into the abdomen. ‡

Many of the practical works extant either overlook this accident, or treat of it very cursorily.§

8. *Ovarian Disease.*—Another case of an ovarian cyst ruptured by a fall, with effusion of its contents into the abdomen, absorption, and permanent cure, is recorded by Dr. James P. White.‖ The injury was followed by severe peritonitis, which yielded to antiphlogistic treatment.

§ IV.—*Injuries and Diseases of the Rectum and Perineum.*

9. *Fissures of the Anus.*—The treatment of diseases of the anus has been much simplified of late years by Dupuytren, Mr. Colles, Mr. Scallan, and others. (Abstract, Vol. III, p. 34.) The treatment of fissures, in particular, has received attention. After pointing out the necessity for alteratives, laxatives, and other remedies, to assist the digestive organs, Professor Miller remarks that the part may be touched with nitrate of silver, and pain will be relieved by belladonna ointment, or hot poultices medicated strongly with opium; but if this treatment is resisted, an incision has to be made through

* The London Med. Gaz. Sept. 11, 1846.
† Notes to Chelius, p. 485.
‡ Idem.
§ Liston's Practical Surgery, 1846, p. 532.
‖ Buffalo Medical Journal, Dec. 1845.

the mucous coat, including the fissure, and the irritable sore converted into a simple wound, which heals in the usual manner. Should this fail, the sphincter ani is to be divided.* We cite this practice from one of the latest works on surgery, for the purpose of referring to an abstract of a paper by M. Demarquay (art. 75, p. 124), in which submucous section of the sphincter is strongly recommended in this and other diseases; and also as anticipating some of the remarks which follow, indicating an extremely various estimate of the necessity and utility of operations in these diseases.

From a Surgical Report of Professor Blandin's practice at the Hôtel-Dieu, it appears that four cases of fissure of the anus have been cured by M. Boyer's method of section of the sphincter, modified according to the plan described in the article referred to. The remark occurs that Boyer's method is liable to accidents when a deep incision is made through the integuments, which may be avoided by the subcutaneous section. This renders the operation very simple, a single puncture only being made in the skin, and the parts being healed in eight or ten days. It has twice, however, happened that the operation had to be repeated, a circumstance which does not prove its inefficiency, but which indicates the following difficulty.

M. Blandin having operated on the dead body, dissected the parts carefully, and ascertained that a fasciculus of muscle attached to the mucous membrane almost always escaped the bistoury, and that it is necessary to glide the instrument carefully along the mucous membrane, in order to divide it completely. In the absence of this precaution, the cause persisting, the fissure must persist also. It may be ascertained whether the operation is perfect by the finger being no longer contracted upon when introduced through the anus. The divided edges of the muscle may be felt, with the intermediate space; the pain also is relieved, and the recovery proceeds without interruption.†

M. Thiry, however, has published some "Practical remarks on fissures of the anus, and their treatment," in the 'Journal of Medicine, of Brussels,' in which a greatly modified view of this subject is taken. Uncomplicated fissures of the anus are kept up, according to M. Thiry, by a *diminution* of the contractility of the muscular fibres of the *middle portion* of the rectum, which becomes excessively dilated, the fibres not having sufficient contractile power to expel the fæces, and to overcome the resistance opposed to their passage by a spasmodic contraction of the sphincter. This spasmodic contraction does not, therefore, according to M. Thiry, deserve the consideration which has been hitherto paid to it. Means should not be applied to remedy this contraction unless it be of extreme activity; in which case it should be treated as a complication. Injections of an infusion of rhatany appear, in the opinion of M. Thiry, to be the most prompt and efficacious remedy in the treatment of these fissures. As the injections cannot act unless the rectum be empty, and the fæces do not habitually distend it, it is necessary to precede and accompany their use by the administration of gentle purgatives, emollients, and a severe regimen. Hip-baths (cold) and sedatives should be used, in order to relieve pain, itching, and severe spasm. If the fissure arise from any local or constitutional disease, of course such must be removed. Fissures of the anus seem so inherent in the constitutions of some patients as to be quite incurable; sometimes, too, they seem to be salutary emunctories, established by Nature for the relief of congestion. Operations in cases of anal fissure should, according to M. Thiry, be entirely abandoned. If, however, any case should be met with in which the operation should appear necessary, it should be done by the method of subcutaneous section. Under such circumstances,

* Practice of Surgery, p. 400. † Gaz. Méd. Aug. 15, 1846, p. 641.

however, the author insists that the operation relieves only a single symptom, and produces no effect on the origin of the disease; it is, therefore, necessary to assist it by other appropriate measures. Cauterization, dilatation, alteratives, and narcotics affect only one or more symptoms of the disease, and not its chief cause. These remedies are, therefore, simple adjuvants, which may, indeed, be used; but which must, at the same time, be combined with more active treatment. An apparatus, invented by M. Cazenave, of Bordeaux, may, when used in combination with the injections of infusion of rhatany previously recommended, be of some service, by its preventing the fæcal matters from coming in contact with the surface of the fissure.*

With this variety of opinions before us, we suspect that our practical readers will conclude that the only rule to be adopted is to bring the best judgment we can to bear upon each particular case, and, with a knowledge of the different proposals that have been made, to treat each case according to the special circumstances with which it is attended.

10. *Union of ruptured Perineum.*†—Professor Dieffenbach has made a particular study of this subject. In old cases the union is effected by suture after paring the edges; in recent cases the paring is not necessary; the contra-indications to the operation are, approaching menstruation, pregnancy, profuse leucorrhœa, diarrhœa, disease of the general system, and severe local inflammation; but experience has taught the professor that the operation cannot be done too soon, that the first twenty-four hours after delivery must be chosen, and this especially when the rectum is also torn. When the suture is immediately applied union occurs in a majority of simple cases, and if the rectum be also torn, a recto-vaginal fistula only remains, to be treated on general principles. The necessary instruments are thick strong needles, bent to a three quarter circle and threaded with waxed silk doubled twice; insect needles of various thickness and length, and cotton threads; a strong needle clipper; strong forceps, hooked and smooth; pincers, knives, scissors, water, sponge, charpie, and syringes; the patient being prepared as for vesico-vaginal operations.

a. Partial recent rupture.—Suppose the anterior half of the perineum be torn through, and the wounded edges are even, the left edge is held with the thumb and finger of the left hand, and the curved threaded needle is inserted a few lines from the posterior angle of the wound, and about a third of an inch from the edge; it must pass straight, and not obliquely, through the wounded edge close to the vaginal mucous membrane, and be drawn forward with forceps until the middle of the thread arrives in the wound; then the right edge is seized, everted a little, and transfixed at the point exactly opposite the passage of the needle through the left edge; the threads are then tied tolerably tight with a double knot, and the ends cut off; then a second suture is applied, and lastly, the most anterior one, so that the commissure may be exactly united, and the edges of the mucous membrane be in exact apposition. Three sutures are generally sufficient for a perineum torn half through; but if after their application the space between them gapes, a couple of fine sutures may be applied which merely go through the skin.

b. Total rupture.—When the perineum is torn completely through to the anus, the edges must be made even, if torn muscle or cellular tissue renders it necessary, and then the suture passed as before; but the most posterior suture must be formed of four or six strong waxed silk threads, passed a full half inch from the edge, and through the whole thickness of the wound, the vaginal mucous membrane excepted. Five other sutures must be applied, the

* Med. Times, Sept. 19, 1846. † Brit. and For. Med. Rev. Jan. 1846.

middle being the strongest, and their distance from the edge of the wound gradually diminishing to one third and one fourth of an inch; union is thus more exact. The edges of the mucous membrane at the commissure are united by five sutures, and a couple are also applied on the internal surface.

c. Partial complicated rupture.—The posterior or middle part may be torn, the commissure remaining; to these the preceding directions apply. The rupture may not be in the median line, but at one side, and complicated by injury of the labia, ecchymosis, &c., in such cases the edges must be carefully made even by scissors before applying the sutures.

In total rupture, complicated by rupture of the anus and inferior part of the rectum, union must be attempted as soon as possible, or the large wound will become inflamed by the urine, lochia, and excrement; the cellular tissue sloughs, and unhealthy suppuration comes on; and if granulation and cicatrization succeed, much substance is lost, and the operation is rendered more difficult and painful. In such a case, union of the rectum is first attempted by fine needles and fine, single, waxed, silk ligature, forming the uninterrupted suture. The ends of the thread are brought out by the anus, then the perineum is united as before.

d. Old total rupture.—The operation here differs, inasmuch as the cicatrized edges have to be removed before the sutures are applied. If much difficulty occurs from contraction of the parts in approximating the edges, a lateral incision may be made on each side.

If there be also rupture of the rectum, the excrement passes through the large fissure, and, on examination, it appears as if there were no perineum whatever, for its halves are drawn to the surrounding skin, and very often scarcely any cicatrix is detected in their room. Sometimes, instead of a perineal fissure, some cicatrized folds remain on each side as the remnants of the perineum. Here the operation will vary according to circumstances, which require either—1st, union of the fissure; 2d, the same with lateral incisions; 3d, transplantation of neighbouring skin. We need not recur to the first and second method. The formation of a new perineum is only to be undertaken in large old fissures reaching deep into the rectum, where the external skin is cicatrized and deeply wrinkled. The edges of the anus, rectum, and vagina are pared. "Then in the depth of the furrow two parallel incisions are made of the required breadth of the perineum; an oblique incision an inch long is carried from their termination outwards, one both before and behind to each incision, thus two oblong quadrangular flaps are formed, which reach from the labia to the anus, and which are then loosened from their under surface. This sort of bridge is united by sutures, and if there is tension this must be relieved by lateral incisions."

The after treatment is of the greatest possible importance with regard to the success of these operations. The best position is on the back, thighs moderately open, and knees bound together with a thick compress between them. If they are bound together without the compress, the united parts are pressed too much together, and this, in wounds united by suture, is almost more injurious than the opposite fault. For the same reason the position on the side is not to be recommended. In fresh ruptures the parts should be often washed by warm water injections, and dried with sponge. If there is much collection of moisture in the vagina, charpie must be introduced and often changed. If much inflammation follow the sutures, leeches must be applied and antiphlogistic general treatment adopted. In old cases, if the woman be strong, cold applications are used, and often changed; if she be old or weak, lead lotions. The urine is never to be passed voluntarily, but always drawn off by the catheter until the wound is firmly cicatrized. After three days a ligature may be removed,

a couple on the fourth, the middle and posterior being left the longest. The internal sutures of the mucous membrane are withdrawn when it can be done without stretching the parts; the uninterrupted suture of the rectum must be left to come away of itself, and sometimes requires a fortnight. Generally speaking, after the third day lead lotions are useful. Everything must be done to prevent the patient having a motion for six or eight days after the operation; spare diet and a quarter of a grain of opium twice daily. When the union is firm, the rectum is cleared by injecting warm barley-water through an elastic tube, assisting the passage of scybala by a scoop; better diet is then given. If union follow around some of the sutures, and a fissure remain in other spots, charpie wetted with an infusion of camomile is placed in the fissure, and often changed. If the edges are indolent, nitrate of silver and dry lint are used. If a recto-vaginal fistula remain it must be treated as before directed. If union does not follow the application of nitrate of silver or resinous dressing, a second operation must be peformed after cicatrization and restoration of the general health. After the most successful operations the vagina must long be kept well cleansed with warm water, and a mild ointment applied to soften the cicatrix. Very often the hardness entirely disappears, and after some years scarcely any trace of the operation remains. T-bandages, sponge, or pessaries in the vagina, daily evacuations of the bowels, which have all been recommended, are excessively dangerous and injurious. "Several women on whom Professor Dieffenbach has operated, had suffered the rupture in the first labour, ten or fifteen years before, and had since remained childless; after the union of the perineum they conceived and bore children, and in no case did a new rupture again take place from the labour."

§ V—*Injuries and Diseases of the Integuments.*

11. *The Effects of Corporal Punishment.*—The attempt to prove thoracic inflammation one of the effects of corporal punishment, in the evidence given at the inquest lately held at Hounslow, where death occurred subsequent to flogging, has led to much discussion on this subject. The whole of the criticisms which we have seen lead to the inevitable conclusion that the inference drawn by Mr. Erasmus Wilson had no rational foundation. We shall confine ourselves to a repetition of Sir George Ballingall's remarks on this subject.*

After observing that his experience had unfortunately been much too ample in this matter, Sir George proceeds to state that he has been called upon to witness the infliction, or to conduct the treatment, of nearly 200 cases of corporal punishment, and in no one of these, so far as his recollection serves him, has there been any prominent or dangerous symptoms of thoracic inflammation. He has not now the means of referring to several cases in his possession, but some of those he has personally witnessed are too deeply and too painfully impressed upon his mind to run any risk of mistake in quoting them. In one of these, where death followed in a few weeks after the infliction of corporal punishment, the patient was carried off by *dysentery*. In another, where the patient's life was brought into the most imminent hazard, this occurred from *hospital gangrene*, the patient being one of seventeen punished men lying in one ward, several of them affected with this formidable disease. In a more recent case, that of a marine of the Woolwich division, a few years ago, where the death was obviously and avowedly the result of a limited punishment, it occurred from *tetanus*. Sir George says he may further advert

* Month. Journ. of Med. Science, Oct. 1846.

to numerous conversations which he has held with army and navy surgeons attending his lectures, who have been induced to give him the results of their experience in regard to punishment. None of these lead to the inference that inflammation of the thoracic viscera is a common source of danger after corporal punishment.

On the evidence given by Mr. Wilson as to the very peculiar state in which he found the deep-seated muscles of the back, Sir George refrains from comment, for this simple reason, that his views are to him not only novel, but in a great measure unintelligible.

12. *Adhesion of wounded Parts.*—The following case is a curious illustration of this process: a butcher in Clare Market cut off a considerable portion of the index-finger of his left hand with a chopper. The blow was directed nearly parallel to the finger, not at a right angle, so that one half of the nail and about an inch of the end of the member were amputated. The bone, fortunately, just escaped injury. The end of the limb was sent for, from the man's shop, by the surgeon, and after washing it and also the wound with warm water, it was placed as accurately as possible upon the bleeding surface, and retained with straps of adhesive plaster. A week afterwards the parts were perfectly united, but the patient had some numbness. A month after the accident he had a good finger, sensibility being quite restored.*

13. *Method of concealing Moles on the Skin by Tattooing, proposed by Pauli.*—The part is to be washed with soap and water, and rubbed till the blood is introduced into the most delicate branches of the erectile tissue; the skin is then made tight and covered with colour, similar to the natural colour of the skin, which is formed of white lead and carmine. Three needles sunk into a cork pad, so that their points project, are then thrust into the skin, and their points from time to time dipped in the paint. In extensive spots we must proceed gradually, so as not to produce too great swelling. The most difficult part is the choice of colour corresponding to that of the skin.†

14. *Incisions in Elephantiasis.*—Dr. Mollica reported to the congress at Naples a case of elephantiasis of the scrotum, of considerable size, cured by deep incisions renewed at proper intervals, aided by aromatic and irritating baths, and the use of arsenic internally.‡

§ VI. *Injuries and Diseases of Joints.*

Our last Volume (p. 226) contains a condensed view of Sir Benjamin Brodie's doctrines respecting diseases of the knee-joint contained in his first three lectures; the following articles comprise the substance of his fourth lecture on the same subject.§

15. *Morbid Alteration of Structure of the Synovial Membrane.*—In this disease the synovial membrane seems to have undergone a peculiar morbid alteration of structure. It is thick in various degrees, sometimes to the extent of an inch and a half, having assumed a sort of pulpy structure intersected by white membranous bands. In some instances there is a preternatural vascularity, and vessels injected with blood are seen ramifying in it to a considerable extent. In other cases no increased vascularity is perceptible. In some cases this is the result of long continued chronic inflammation, but in others it takes place independently of inflammation; at least in several cases there were no symtoms indicating its presence until the disease had reached its most advanced stage. Mr. Hodgson, of Birmingham, has met with this disease in the joints of one of the fingers.

* The Med. Times, July 11, 1846. † South's Translation of Chelius. ‡ Annali Univ. di Medicina. § The London Med. Gaz. April 10, 1846, p. 623.

Where the disease supervenes on repeated attacks of inflammation, there are in the first instance inflammatory symptoms. In other cases, in which it seemed not to be inflammatory in its origin, the symptoms were as follows:—The patient complained not of pain, but of a slight stiffness in the joint. The pain then became more considerable, and the knee somewhat swollen. The swelling and stiffness increased, still unaccompanied by pain, and at last the swelling attained a large size. On examining the knee at this period, a soft elastic swelling, without any sense of fluctuation, having somewhat of the same shape that it presents in cases of inflammation of the synovial membrane, when the joint is distended with fluid, has been found, the principal difference being that the swelling, instead of being uniform, was more prominent in one part, less so in another, in consequence of the difference in the progress of the disease in different situations. Occasionally, the disease is limited to one portion of the membrane. It has sometimes gone on for two, three, four, of five years before any further symptoms showed themselves. As it has advanced to the layer of the synovial membrane reflected over the cartilage, the latter has begun to ulcerate, as indicated by aggravation of pain and startings of the limb at night. At this stage small abscesses form in the substance of the diseased synovial membrane. These gradually make their way to the surface, one coming forward in one place, and another in another, discharging a very small quantity of matter.

When the cartilages are thus ulcerated, and matter formed in the joint, and perhaps in the substance of the synovial membrane also, the patient's health begins to be affected, as in other cases of articular abscesses, and at this period nothing can be done but to amputate the limb.

The disease is of rare occurrence, and is to be distinguished from the pulpy thickening of the synovial membrane formerly described.

16. *Fleshy Tumours within the Knee-joint.*—Fleshy tumours sometimes grow from the inner surface of the synovial membrane. Sir B. C. Brodie has seen two cases, one under the late Mr. Ewbank, and the other in a patient of his own. In both the disease was mistaken, before the operation was performed, for a loose cartilage. In Mr. Ewbank's case he detached and removed it, and the patient recovered without any bad symptoms, but there was reason to believe that the excrescence grew again. In his own case, the excrescence had a broad attachment, but he divided it, and removed it. A good deal of inflammation supervened, but the patient recovered. This was upwards of twenty years ago, and he has continued well ever since. Still, the operation is attended with a certain hazard to the limb, therefore Sir B. C. Brodie does not recommend it, except where the disease is productive of very great inconvenience.

17. *Malignant Disease of the Knee.*—The morbid growth, as far as Sir B. Brodie's experience goes, always has its origin in the cancellous structure of the bone, sometimes of the femur, sometimes of the tibia. When it begins in the tibia it is likely to be detected at an earlier period than when it begins in the femur; this bone being less covered by muscles than the femur, any enlargement of it is more apparent.

Sometimes there is, in the first instance, a dull pain referred to the seat of the morbid growth, followed by a slight enlargement of the joint. In other cases the enlargement is the first thing perceptible, there being no antecedent pain. In some instances the patient is not conscious of the existence of any disease until it is suddenly roused into action by accidental injury. In the early stage, the diagnosis is always difficult. The tumour gradually increases, sometimes with much, sometimes with little pain, and, as it increases, the nature of it becomes sufficiently manifest. In some parts it is hard, where

the external shell of bone remains entire, in others, where the bone has disappeared, it is comparatively soft and elastic. In some parts the skin retains its natural appearance, in others it is of a dark red colour, and adheres to the morbid growth beneath. The superficial veins are seen in a dilated state ramifying over the surface of the tumour. For a long time the motions of the joint are not materially impaired, and the tumour may attain a large size without the cartilage being affected. Ultimately all the textures of the joint become involved, and unless amputation be had recourse to, the skin itself ulcerates.

There is no remedy except the removal of the limb. The operation will not produce a cure in the majority of instances. Sir B. C. Brodie has, however, met with two cases in which the patients are alive and well, as far as he knows at the present time, although in one the operation was performed seventeen years ago. In each case the morbid growth had begun in the condyles of the femur; it had attained a very large size, but had at its upper part a very abrupt termination, and in sawing through, the bone itself and the medullary membrane seemed to be in a perfectly healthy state. Sir B. C. Brodie feels bound to say that however frequent the failures may be, amputation is occasionally successful.

18. *Loose Cartilages in the Knee.*—These are more commonly met with in connexion with the synovial than the serous membranes, but are not peculiar to the former. They sometimes are formed in the pleura and in the tunica vaginalis, and in one instance in the cavity of the peritoneum. In its recent state the loose cartilage is generally flattened, smooth on the surface, but of an irregular shape. At first it is connected by a band of membrane, which seems to be a continuation of the synovial membrane, but at last this becomes ruptured, and then the cartilage is altogether loose in the articular cavity. When it is of small size, it is cartilage throughout, but when it attains a large size it is found that bone has been deposited in the centre. When dried, it shrinks so that scarcely any part except the bony centre is perceptible. Sometimes there is only one, but Sir B. C. Brodie has, in operating on a single patient, extracted as many as five.

The first inconvenience experienced generally occurs in walking. The cartilage slips between the articular ends of the bones, producing a good deal of pain, interfering with the motion of the joint, and sometimes causing the patient to stumble. By a little management he contrives to expel it from the situation in which it is lodged, and then walks home well enough, but is liable to a recurrence of the accident. The distress occasioned is different in different cases, depending on the circumstance of the cartilage being attached or not to the synovial membrane, on its size, and other circumstances. In one case it may slip more easily between the bones, and less easily in another. Not unfrequently the patient goes on for years suffering very little. In other cases not only does the cartilage frequently slip between the bones, but whenever it does so a violent attack of inflammation of the synovial membrane takes place, so that the patient is laid up perhaps for weeks. After a time it would appear as if the constant slipping of the cartilage between the bones injured the articular cartilages, and caused them to ulcerate. These loose cartilages may be removed by an operation. In some instances no inflammation followed the operation, in others a great deal. In one case under the care of the late Mr. Jeffreys, suppuration followed, and the patient ultimately lost his limb. The operation requires to be performed with the greatest caution. The cartilage should be fixed over the outer or inner condyle of the femur, and there held, either by the surgeon or an assistant, to prevent its slipping into the joint. The skin, the cellular membrane, the fascia, the liga-

ments, and the synovial membrane, must be slowly divided one after the other, the knife being held with a light hand, as otherwise the cartilage will be pressed into the joint, and cannot be extracted. Having divided the parts carefully, and made room for the cartilage to escape through the synovial membrane, it must be taken hold of with a tenaculum or some other sharp-pointed instrument, withdrawn, and the edges of the wound brought together. If it should slip away, it must never be groped for, but the edges of the wound should be brought together, and no harm will happen, and there will be nothing to hinder the operation being performed on some other opportunity. A principal source of danger is the anxiety of the surgeon to finish the operation, which leads him to grope for the cartilage in the joint when it happens to have slipped, instead of waiting for a future day.

On the subject of foreign bodies in the joint, we take this opportunity of reverting to a paper by M. Fleury, surgeon to the Hospital of Annecy,* who has entered somewhat more at length into the history of the disease, and whose observations are in the main confirmations of the views of Sir B. Brodie.

M. Fleury remarks that the affection is barely mentioned in the writings of the ancients. Ambrose Paré, in the year 1558, is the first who makes allusion to it, and subsequently to him the disease has been treated of by Reimar, in a work published at Leyden in 1787; by Heisman, and Henkel, in Germany; by Bromfield, Bell, Home, Brodie, and others, in England; and in France by Desault, Bichat, Boyer, Dupuytren, &c.

As far as we can ascertain, M. Fleury proceeds, the knee-joint is the only one in which foreign bodies have given rise to severe consequences; but other joints may nevertheless be occasionally affected. Haller has seen them in the articulation of the lower jaw; Bell in that of the tibia, with the astragalus. Bichat has also met with them in the articulation of the os pyramidale and pisiforme, and Laennec in the shoulder-joint.

These foreign bodies are most frequently found singly, but in some instances several are met with in the same joint. Morgagni has seen as many as twenty-five in the knee-joint. Their size is subject to great variation, as is likewise their form. Ambrose Paré extracted one from the knee as large as an almond, and Dupuytren one the size of a kidney bean. The largest on record is one described by Desault; this was 33 millimetres in one diameter and 18 in the other. Their form is generally ovoid, or more or less rounded, having one side plane, the other convex. Their colour is whitish or gray, and occasionally dotted with red points.

The structure of these bodies is infinitely variable, being sometimes cellular, at others cartilaginous or osseous. Both Sir B. Brodie and M. Fleury remark, that in some instances the centre is osseous and the surface cartilaginous. Bichat believes that this is regulated by the duration of the affection, and that each of these bodies passes from the cellular form through the cartilaginous form, and at length becomes distinctly osseous.

Several hypotheses have been propounded for the explanation of these formations. As they are most often seen to follow a blow or other violence offered to the joint affected, it is not rational to conclude with certain authors that their origin is due to the aggregation of molecules existing in the synovial fluid, in the same way as vesical calculi are formed in the urine. Haller and Reimar, as is well known, considered them to be fragments detached from the articular cartilages. Hunter, on the other hand, believed them to be coagula of blood, which had undergone organization. Brodie is inclined to surmise that they may occasionally be small detached exostoses;

* Journal de Méd. de Lyon; Encycl. Méd. Avril 1845.

and thinks that they are never preceded by inflammatory symptoms. Laennec thought it probable that these bodies are originally developed in the soft parts surrounding the joints, and project inwards into their cavity, pushing before them a duplicature of synovial membrane, which being ruptured by some accidental violence, leaves them free and moveable. Lastly, Dr. Bidder, as will be seen by our extracts (art. 56) refers them to epithelial cells which have been nourished by the synovial fluid.

M. Fleury remarks that it is sufficiently reasonable to believe that these bodies are originally formed of a portion subsequently detached, either of the synovial membrane, semilunar cartilages, or even of the osseous structure, which enter into the composition of the joint. He considers that their progressive development from the cellular form to that of perfect bone, is a sufficient proof that they have derived their nutrition from the articular surfaces to which they have at one time or other been adherent; and that the following example seems to render this opinion incontestable. In 1834 M. Bourse presented to the Royal Academy of Medicine of Paris a foreign body, which he had extracted from the knee-joint of a patient, and which had become perceptible after a fall upon the part. It was attached to the interior of the articulation by a ligamentous bridle; was flat and covered with cartilage on one side, and rough and distinctly composed of bone on the other. MM. Cloquet and Velpeau did not entertain a doubt that it was a fragment detached from the inner condyle of the femur.

On the subject of treatment M. Fleury's opinion is in accordance with Sir B. Brodie's, that extraction is the only sure method of affording relief, the operation being simple and easy of performance, and its dangers much exaggerated, provided the operator does not make use of unnecessary violence in searching for and extracting the foreign body.

19. *Cartilages and Bone of the Knee worn away by Friction.*—According to Sir B. Brodie, this state of things occurs in old cases of inflammation of the synovial membrane, where the patients have been liable to the disease for many successive years, and generally in gouty persons, there being in many instances a deposit of lithate of soda at the same time on the inner surface of the membrane.

The parts appear as if they had been worn away by friction; but if this were all, the cancellous structure of the bone would become exposed, which is not the case. A process of repair is going on simultaneously with that of destruction, in consequence of which the exposed surface of bone everywhere is of a hard and compact texture.

The existence of this singular condition of the joint is indicated by a grating like that of a rusty hinge, a circumstance which the condition of the articulating surfaces at once explains.

A somewhat similar symptom may occur under other circumstances. In young persons, especially in young women, there is sometimes a crackling not only of the knee, but of the other joints, apparently connected with a defective secretion of synovia. In elderly persons the cartilage undergoes an alteration of structure, assuming a fibrous appearance, and this is followed by an absorption of it, so that the surface of the bone is exposed, and the result is a grating like that of a fracture when the joint is moved. This is one of the changes incident to advanced life, and is scarcely to be regarded as a disease.

20. *Hysterical Affections of the Knee.*—Sir B. C. Brodie has known patients labouring under this affection to be treated for a long time for scrofulous disease, or ulceration of the cartilage; and cases have occurred in which the limb, through this error, had been actually amputated. An hysterical young

woman sprains her knee, or thinks that she does so, in walking. She complains of pain; believes that she cannot walk; she becomes an object of attention, and her friends are alarmed by the prospect of a white swelling. The following are the diagnostic marks. First, the patient is of an hysterical constitution; secondly, the joint is not swollen; thirdly, a light touch of the skin produces as much pain as heavy pressure; and lastly, if the patient's attention be directed to other matters, the joint may be handled without causing any pain.

For the most part the diagnosis is sufficiently easy. There are some cases, however, which will puzzle a surgeon. For instance, a girl labours under this affection; it has been mistaken for two or three years; leeches have been applied, repeated blisters, and stimulating liniments of all kinds have been used. These applications alter the appearance of the joint; they cause effusion of serum and lymph beneath the skin; the joint seems swollen; and under this mistaken treatment, continued for two or three years, although there is no disease at all, the knee looks as much like a diseased joint as possible.

The first step is to direct the attention of the patient to other things; let the family not make her ailments the subject of conversation; and, *above all not give her too much surgical attendance.* Nothing should be done in the way of local application, for it only fixes the thoughts on the part affected. If anything be applied, it should be a simple remedy, such as a lotion of camphor mixture and spirits of rosemary—had recourse to only when the pain is more severe than usual. Probably the menstruation will be found deficient; and some preparation of iron may be exhibited with advantage. In many cases there is a weak circulation, cold hands and feet, and combinations of iron and ammonia, with infusion of quassia or some other bitter, may be useful. If the patient lives in the metropolis, she should, if possible, spend a part of the year at the seaside; and, above all, should not be confined to the sofa. She will say that she has so much pain that she cannot move; crutches should be employed, not urging her to do very much at first, for this will excite suspicion, and have a bad moral influence; but she should be persuaded to do what she can without great inconvenience. She will find that she does not suffer as she had anticipated, and will then be disposed to do a little more, until at last she finds that she can walk as usual. Whether she recovers soon or not will depend mainly on this—whether or not she really wishes to be cured; and in this respect there is a very great difference.

Sir B. Brodie remarks that some young women (and young men also, for the same train of symptoms sometimes occurs in the other sex), prefer being laid up, and being pitied and made much of by their families; while others, being of a higher order of mind, are really anxious to get about, to enjoy the society of their friends, and perform their social duties; and the latter will recover much sooner than the former.

Passing from Sir B. Brodie's lectures on diseases of the knee-joint, we find before us a variety of papers on—

21. *The Treatment of Hydrarthrosis by Iodine Injections.*—From the time that Bonnet and Velpeau proposed this method to obtain a radical cure of the disease the subject has undergone much discussion, particularly on the Continent; and the journals containing frequent notices of those discussions, with reports of cases, we cannot pass them over, although the practice has found no favour on this side the Channel. Mr. South remarks that he can hardly think the operation of puncturing a dropsical joint is, under any circumstances, justifiable, in consequence of the risk to life from inflammatory action; and as to the use of injections, after emptying the joint of its contents, he thinks it cannot be too much deprecated.* This treatment was, however, again the

* Notes to Chelius's Surgery, par. 1879.

subject of a long argument at the Academy of Medicine, in March of the present year;* M. J. Roux, of Toulon, having for the first time employed it in the humero-scapular articulation. His case, which served as a text, is described as follows.

A man, aged 47, of good constitution, never having had any serious illness, in September, 1843, experienced pain and swelling of the left wrist. This being cured in about twelve days, he soon afterwards experienced something analogous in the right hip; a month later, in consequence of an effort to raise a large stone, a violent pain occurred in the shoulder, which continued till August, 1844, when he was obliged to leave his work. M. Roux found an enormous hydrarthrosis, drew off by puncture 500 grammes of liquid, and then tried compression, but without success. The puncture was repeated, 400 grammes of liquid removed, and 400 grammes of iodurctted water injected in its place. A part of the solution, being three times withdrawn and replaced, was intentionally left within the joint.

On the following night there was pain, disquietude, and fever. In spite of linseed cataplasms, a triple phlegmonous inflammation presented itself in the subspinal fossa, the axilla, and the bicipital groove. An incision was made in each, serum mixed with blood and pus was discharged, and the wounds remaining fistulous were not cicatrized until after the expiration of a month. Relapse of the inflammation and suppuration occurred, fresh incisions were made through the cicatrices, and the articulation appearing, as in the first instance, free from this active inflammation, plugs of charpie were inserted into the wounds to prevent their premature closure. Cicatrization was not allowed to take place till the month of December, when all trace of deep inflammation had disappeared; after which a vesicatory was applied over the deltoid for twenty days, and the cure was soon "complete."

But, according to the report in the 'Gazette des Hôpitaux', *nearly* the whole of the motions of the arm were preserved, accordingly the cure was not quite complete; we see especially, the 'Journal of Surgery' remarks, the degree of risk the patient was exposed to, and the narrow escape from suppuration into the articulation compromising the life of the patient. The treatment met with no other support in the Academy but that of the reporter himself. M. Bérard alone amongst his colleagues had tried it, and had not much reason to praise it,—not that any accidents had occurred, but it did not cure the disease. The treatment has been resorted to in thirty cases, many of which were not cured, and among these amputation was subsequently necessary in three cases. In horses even, if M. Leblanc reckons fifteen successful cases, M. Bouley cites seven unsuccessful ones, and amongst the latter three which died of the consequences of reaction.

M. Velpeau endeavoured to circumscribe the cases in which the plan is applicable; thus, in the three cases of amputation the effusion was complicated with disease of the nature of white swelling—he condemns injections in these cases; he considers that the hydrarthrosis should be uncomplicated with organic disease, and that it should have resisted other remedies. The cases which combine these two conditions are very rare; the facts recorded show that they have not been selected with the greatest care.

The nature of the injection is also important. M. Bonnet tried pure tincture of iodine; in two cases of simple hydrarthrosis violent reaction occurred. A solution of one part of iodine and two parts of iodide of potassium in fifteen parts of water produced very intense inflammation. The formula extolled by M. Bonnet, that is to say, two parts of iodine and four of iodide of potassium

* Journ. de Chirurg. Mars 1846, p. 85.

in sixteen parts of water, which is double the strength of the former, appears never to have been tried by himself. M. Velpeau has used a mixture of tincture of iodine and water, sometimes in equal parts, sometimes in the proportion of a third or even a fifth part of tincture of iodine, with less unfavorable results. M. Bouley, who had cited, in the course of the discussion, three unsuccessful cases in horses, communicated by M. Verrier, of Rouen, records three new cases, treated by the same individual, with complete success; having employed the tincture of iodine, augmenting the proportion of water. It was also remarked that water decomposes the tincture of iodine, and that these diluted injections are essentially alcoholic; they are more alcoholic than the wine used for hydrocele.

Finally, reverting to our own authorities, Mr. South remarks that he doubts whether any surgeon amongst us would risk his reputation by a practice which must be attended with almost certain mischief; and of the particular solution used by M. Bonnet, he further remarks, that it must be highly caustic, and "such as no English surgeon would dare to throw into a joint, though a French surgeon might."*

22. *Hydatid Cysts of the Wrist.*—M. Robert† admitted lately into hospital, a woman who had for five years suffered from a cyst of the wrist. Having recently experienced a fall, the tumour was considerably bruised, and became inflamed in consequence of the injury. M. Robert made an incision above the annular ligament, and another below it, and extracted from the tumour a large number of granular ovoid substances, which Dupuytren considered to be hydatids, but M. Velpeau looks upon as fibrous deposits, resulting from ancient hemorrhage, and MM. Rayer and Mandl believe to be organized substances, endowed with life. The tumour, after operation, was submitted to continuous irrigation, and speedily cured. M. Chassaignac recorded a case of the same kind, in which a complete cure followed puncture with a trocar and the injection of iodine.

§ VII.—*Injuries and Diseases of the Bones.*

23. *Necrosis of the Maxillary Bones, supposed to be produced by Phosphorus.*—A paper by Dr. Balfour on this highly curious subject, is recorded in our Extracts (art. 52, p. 94), but as the facts are new, and have excited considerable attention on the Continent, we proceed to inform our readers, more fully, of all that has been advanced. We commence by reciting a case by Mr. M'Carthy, which occurred in the Hôpital Necker, under Dr. Richet.‡ — Basser, aged 38, employed during three years in a factory of lucifer-matches, was admitted into hospital on the 17th of February, 1846, for a tumour in the left parotidian region. The man was occupied in the manufactory in preparing the phosphoric paste with which the extremity of the lucifer-match is loaded. The swelling appeared to be owing to decayed teeth, and was attended with very trifling pain. On the 25th of February, although it had previously appeared to subside under the application of leeches and poultices, fluctuation was distinct. A puncture was made, and denudation of the inferior maxillary bone was recognized. Erysipelas set in on the following day, and was not mastered until the 20th of March, when the swelling appeared to extend from the ramus of the maxillary bone to its body. The swelling increased daily, with diminution of the diameter of the mouth; no redness or heat could be detected, although mastication was becoming more and more

* Lib. cit. par. 1881, note. † Med. Times, June 13, 1846, p. 206.

‡ Med. Times, July 4, 1846.

impeded. The teeth loosened in the progress of the disease were extracted by the patient himself, and in the course of the month of April, the right ramus of the maxilla became affected, but slowly, and without pain or redness; tumefaction and induration being the only symptoms of disease present. On the 5th of May, the patient had lost all his teeth except the four last molars of the right side. The alveolar edge of the maxilla was denuded, and blackened by its prolonged contact with pus. Several fistular abscesses, communicating with the mouth, had opened all around the rami of the jaw, and pus was swallowed with the salivary secretions. On May the 16th, the superior maxillary bone became also diseased in several parts, although the teeth remained solidly attached. Induration was gradually forming around the bone, but a purulent secretion was established in the left meatus auditorius; pain appeared in the corresponding side of the head, and, without paralysis, the patient became comatose, and expired on the 8th of June.

On post-mortem examination the whole inferior maxillary bone was found necrosed. Except that part of the coronoid processes into which the temporal muscles are inserted, it was of a grayish colour, and four teeth which remained were easily extracted. Here and there periosteal secretions were observed on the surface of the bone, most abundant on the left ramus, where the disease commenced. The surrounding soft parts were "cartilaginified," and there were osseous laminæ forming the basis of a new bone, which began to surround the old one. There were numerous fistulous sinuses, containing blackish and fetid pus. The left temporo-maxillary sinus was filled with pus, the cartilages eroded, and pus had penetrated into the ear through the Gasserian fissure, and the cavity of the tympanum was full of pus. Within the cranium, in the left temporal fossa, the dura mater was of a blackish colour, and easily separated from the bone, and the whole of the corresponding cerebral lobe was converted into a soft, brownish substance, formed of a mixture of clots of blood, with pus and cerebral matter. The abdominal and thoracic viscera presented nothing abnormal.

M. Sédillot, of Strasburg, called the attention of his pupils to a case of this disease, in July 1845. In August of the same year, M. Strohl made a communication on the subject to the Society of Medicine in that city. Many other German physicians remarked it, and M. Lorinzer published a work, founded on nine cases. M. Roussel's paper, to which we shall presently refer, was presented to the Academy in March 1846, and two cases have been observed at La Pitié, under M. Bérard. Dr. Hubbauer, of Ludwigsburg, has also reported three additional cases, one of which resulted in death, and the others were under treatment. The editor of the 'Gazette Médicale' remarks that these observations are now so multiplied, that the preservation of work-people from such fatal results becomes a subject of public hygiene.*

There is a more detailed article on the subject in the 'Comptes Rendus,' by Dr. Theophilus Roussel,† who states that exposure to the phosphorated vapours is the only cause of the insalubrity attached to the manufacturing of lucifers, and that the workmen are subject to more or less severe affections of the respiratory passages, and also of the gums and maxillary bones, terminating in necrosis, and frequently in death.

Where all the operations are performed in the same place, all the workmen are indiscriminately subject to cough. But in the greater number of cases, this cough is of little inconvenience, and only occurs at intervals, in damp weather, and when bad ventilation allows the phosphorous vapours to accumulate in the workshops. Where the workshops are distinct from each other,

* May 2, 1846. † The Chemist, May 1846, p. 229.

cough and bronchitis only exist among those workmen who dip the matches into the chemical composition, and among the women who remove the dipped matches from the stands on which they are placed, and fill the boxes, and make up the packets. In the cases of many of the women, the bronchial irritation passes to a chronic state, but among none of them has there been met with the serious symptoms observed by M. Gendrin; it is true that in this state of the disease, the workpeople are no longer in the shops, but at the hospital. A certain number of facts leads to the belief, that the long-continued action of phosphorous vapours determines the development of tubercles, in such as are predisposed. The phosphorous emanations appear to act in the same manner as irritating substances, and not from any special powers. The disease of the maxillary bones is much more serious than the preceding.

In the greater number of cases, syphilis and scrofula are foreign to the development of the disease; the latter has not appeared until after a sojourn of at least two years in the manufactories, and all the individuals affected were habitually exposed to the phosphorous vapours. One or more of the teeth have been affected a considerable time before the appearance of the evil, or even before the party affected enters the factory. On the other hand, workmen who came to the factory with sound teeth preserved them untouched, and exhibited no affection of the jaws. The caries of the teeth, according to Dr. Roussel, plays a principal part, which has not been suspected, in determining the disease. The latter begins by pain in the teeth, and by discharges: at the end of some time, the teeth become loose, and fall out, or the pain obliges the workmen to have them taken out. The discharge soon makes so much progress that abscesses are formed, which open either in the mouth, through the substance of the gums, or in the face or neck; according as the seat of the disease is in the upper or lower jaw. In one case, the pus that flowed for the first few days had a very strong phosphorous smell. In other cases, no abscess is formed, but when the teeth have been extracted, or have fallen out, the opening in the gums, instead of cicatrizing, remains open, and a gray and fetid pus soon escapes, which occasions a constant salivation. The suppuration becomes every day more abundant, the substance of the gums is destroyed, and the maxillary bone becoming dead over a larger or smaller part of its surface, is laid bare in the mouth, and, finally, it loosens, becomes detached, and falls off.

If the patient follow a proper regimen a cure may take place; but more frequently the destruction caused by the constant salivation, and particularly by the continuous and fetid suppuration, gradually destroys the patients. Digestion becomes deranged, fever supervenes, and the unfortunate workman soon succumbs. M. Heyfelder endeavoured to effect a cure by excision, but failed.

The disease may exhibit itself either in the upper or lower maxillary bone, on one or both sides at the same time, and even in both maxillary bones.

The reasons given by M. Strohl for distinguishing this disease from necrosis, and also from caries, are not well founded. The characters of the pus, with the exception of the phosphorous odour, which is not sufficiently established, and those of the separation, are common to all the necroses of the maxillary bones. The character drawn from the absence of the regeneration of the osseous tissue has been contradicted by observation. It cannot be doubted that it is not derived from the exhalations that deteriorate the atmosphere of the workshops; but to what agent can it be attributed? In Germany it is charged to the arsenical vapours, which, in some manufactories, are mingled with the vapours of phosphorus; but the injuries produced by arsenical vapours have no resemblance to those described; and, on the other hand,

disease of the maxillary bones occurs in workshops where arsenic is not employed directly, nor arsenical phosphorus. Ought it to be attributed to the vapours of phosphoric acid? May not the action of phosphorus in a gaseous state be suspected in the atmosphere of the workshops? It is impossible to answer these questions.

The editor of the 'Gazette'* inclines to the opinion that the affection of the teeth is the first stage of the affection; the first effect of phosphoric vapours on the whole of the parts; and M. Strohl believes that the phosphoric vapours are converted by the oxygen of the atmosphere into hypophosphoric acid, which, during respiration, dissolves in the saliva, and forms phosphoric acid; the gums are softened by the impregnated saliva, then the teeth are attacked, and ultimately the bone itself. Thus it is not by mixing with the blood and circulating in the economy that this substance produces its effects, as the syphilitic poison attacks the throat, but its action is altogether or principally local. The writer in the 'Gazette' leans to this view, observing that the deleterious substance is "filtered through the gums."

But some further doubt has been thrown in the French Academy of Sciences on the etiology of the affection. M. Dupasquier, of Lyons, stated he had been induced to examine carefully the Lyons factories, in order to ascertain how far the assertions made by various physicians were correct. He had acquired the certainty that in the city of Lyons the workmen do not present those alterations of the maxillary bones observed in other parts of France, and in Germany; but that they are subject to a mild form of bronchitis, which yields without obliging the men to abandon their occupations, even for a short time. M. Dupasquier attributes the necrosis of the jaw, stated to occur in the German and Parisian factories, to the presence of arsenic in the phosphorus employed in the trade.†

According to M. Gendrin,‡ the phosphoric vapours exercise an unfavorable influence on the respiratory organs, differing little from ordinary bronchitis, but characterized by considerable debility, anorexia, sometimes by diarrhœa, and generally by a febrile movement, which is not proportionate to the bronchial affection.

The measures proposed to render the manufactory of lucifer-matches healthy consist—1, in the complete separation of the workshops, so as to remove the largest of them as much as possible from the phosphoric emanations; and, 2, in the establishment of proper modes of ventilation in shops that cannot be completely freed from those emanations.

24. *Fractures of the Cervix Femoris.*—Our readers were made acquainted with the state of the question in relation to this subject at page 256 of our second Volume, since the publication of which, Dr. Alexander Watson has produced four cases which he considers completely prove the problem of the possibility of bony reunion, even when the fracture is situated completely within the capsular ligament. The first was a case of Dr. Robertson's, in whose museum the preparation of the bone is contained, the cervix femoris is much shortened, with new depositions of bone projecting from its anterior surface, and an apparent deficiency from absorption of the posterior part; the internal perpendicular section through the head and neck exhibits a distinct line of solid osseous matter uniting the head to the remaining part of the cervix in connexion with the shaft. The second case occurred to Mr. Lizars;§ the patient died seven years after the receipt of the injury, from which he had perfectly recovered; the bone exhibited appearances externally of fracture, and deposit of new bone at the upper part of the cervix, upon the anterior

* June 27, 1846. † Med. Times, Sept. 12, 1846. ‡ Gaz. des Hôpit. Juin 27, 1846.
§ The Edinburgh Med. and Surg. Journ. July 1846.

surface, within the capsular ligament; the posterior part of the cervix much shortened by absorption and the altered position of the head, but the whole completely consolidated; the horizontal section exhibited the altered position of the head arising from the curved form of the cervix, by which it had become convex anteriorly and concave posteriorly; the new and old parts of the bone having assumed an uniform cancellated structure, no distinct line of osseous reunion is here observable. The third case was published by Dr. Begbie, it was that of a lady, aged 77, who laid for five months in bed, but ultimately recovered so far as to walk with a high-heeled shoe; she died about two years and a half after the receipt of the injury, and, on examination, the posterior part of the cervix femoris was very much absorbed, so that the head of the bone approached near to the trochanter major; the anterior part of the cervix bulged and was prominent, and presented the appearance of new osseous deposition close to the head of the bone; the internal structure, exhibited by a longitudinal section, represented the appearance of a transverse deposition of dense osseous matter, crossing the cervix close to the head of the bone. The fourth case was given to Dr. Watson by Mr. B. Bell; the woman was 67 years old; she lay on her back ten weeks or more from fracture of the neck of the thigh-bone; she lived upwards of seven years, and moved about latterly with great alacrity unassisted by either crutch or staff; the bone presented the appearance of a line of fracture at the upper extremity of the cervix; the same distortion of the cervix and head of the bone, and the same shortened and concave form at its posterior part; although the head seemed to have been detached from the cervix, it was now firmly united by bone. The appearances presented by these four specimens are in several respects very similar. 1. The head of the bone seems to have been detached from the cervix. 2. Much absorption of the cervix has taken place. 3. The distorted position of the head and cervix is the same in each of them. 4. The distorted shape of the cervix at the point of union is precisely such as might be expected to take place in consequence of the everted position of the limb during the process of reunion, while the head remained fixed in the acetabulum. From these circumstances, taken along with the previous history of the cases, which were not only similar, but presented the usual indications of fracture, it certainly appears obvious that the only proper conclusion which can be drawn is, that they were cases of fracture of the *cervix femoris* within the capsular ligament, reunited by bone. Dr. Watson also cites the cases by Mr. Langstaff, Mr. Stanley, and Mr. Liston in proof of the same proposition; but although the possibility of bony union may be thus completely proved, this must be considered as a rare occurrence, rather than as the common result of the injury. It seems to require the concurrence of several favorable circumstances for its accomplishment.

§ VIII. *Injuries of the Vertebræ.*

Our volumes contain several interesting cases of fracture and of dislocation of the vertebræ. In the present there is recorded a complicated injury of this kind by Mr. Brotherston (art. 57, p. 99). It was supposed to have been produced by a fall on the pavement from the top of a wall ten feet high, the crown of the head coming in contact with the ground, the body doubling over, the head being pressed upon the chest, and both sternum and vertebræ giving way. The man's sudden death on moving his head deserves attention. A similar occurrence, under like circumstances, took place in a case which lately came under our own eye, and we allude to these facts as bearing upon the plan of treatment resorted to successfully in the instance to which we are now about to refer.

25. *Extension in the Treatment of Fracture and Dislocation of the Spine.*—The article in our extract (p. 157) is a most interesting case of injury to the vertebræ treated with a certain amount of success by extension. The author, Mr. Crowfoot, remarks, that all the ancients, from Hippocrates to Ambrose Paré, recommend extension in the treatment of fracture of the spine, while every writer of the present time deprecates its employment as dangerous. In the course of his practice he had had three or four cases of fractured spine, and in these cases he had done precisely what he had seen done by others, he had endeavoured to foretell, according to the situation of the fracture, what length of time the person would live, and that was all. Mr. Crowfoot had become acquainted with the ancient writers on this subject, and looking to his previous want of success, had determined to employ the mode of treatment they recommended. In the case in which it was tried the man was completely paralysed both to sensibility and voluntary action. After the extension the deformity was diminished, but not entirely removed; the arch of the displaced dorsal vertebra appears to have been removed from the body of the one beneath it, and during the extension sensibility was so far restored that on pinching the man he felt it in parts of the limb. The bones were kept in an advantageous position and treatment adopted to prevent inflammation. After three weeks the power of motion began to be restored, and gradually and steadily returned, and the patient recovered completely, except that a partial deformity of the spine remained. Two fingers could be placed between the spinal processes.*

We call especial attention to this case, because in our own practice we have met with four or five cases of fatal injury to the vertebræ, where the accident occurred chiefly to labourers in good health, in the prime of life; where the individuals presented no symptoms on being received into the hospital wards except the paralysis; where every surgeon who saw the cases pronounced them hopeless, and where it was not deemed prudent to make any effort at relief; and because, from the examination in more than one of these instances, it has occurred to us, that a mechanical adjustment of the injured or displaced vertebræ might be sometimes effected in such cases, and a chance of recovery thereby obtained.

§ IX.—*Constitutional Diseases.*

26. *Cancer.*—Dr. O'Ferrall's case (Extracts, art. 55, p. 97) belongs to a class which furnishes one of the main arguments for the belief in the essential identity of schirrhus and encephaloid disease. But Dr. Walshe† affirms that these cases, and even those where the different forms of cancer are met with in one and the same organ, in close proximity, far from demonstrating their identity, do not even *prove their alliance.* They prove generic similarity; but Dr. Walshe cannot believe that things essentially different in several of their *visible, structural,* and *vital* attributes are originally identical. Admitting the difficulty of determining, in many instances, whether a particular morbid specimen should be designated scirrhus or encephaloid, Dr. Walshe's investigations lead to the conclusion, that the inference drawn by many pathologists of the two products being identical in essence is unwarrantable. The progress of micrology alone has shown that certain substances considered identical, by observers who trusted to, and were misled by physical characters visible with the naked eye, are in reality extremely different. Respecting the alleged softening of scirrhus into matter of encephaloid aspect, its presumed occurrence may in reality depend upon the inability to

* Prov. Med. and Surg. Journ. Oct. 7, 1846.

† The Nature and Treatment of Cancer, 1846, p. 175.

distinguish the products by their outward characters.* Dr. Walshe explains, hypothetically, the display of the characteristics of encephaloid, in a tumour possessing those of scirrhus in the main, by the development of encephaloid as a new product in the scirrhous mass. He considers this hypothesis more reconcilable with ascertained facts than the notion that these substances are primitively identical.† Vogel, however, regards cancer as presenting a group of forms merging into one another without any fixed line of demarcation.‡

Our present Report on Surgery in general is somewhat curtailed to make room for our promised article on Syphilis. The next Volume of the Abstract will embrace a Report on *Aural Surgery*.

REPORT ON SYPHILIS.

BY HENRY ANCELL, ESQ., M.R.C.S.

1. The special direction of pathological inquiries to the morbid states of the fluids, which may be dated from about the year 1839,§ and the promulgation of the principles of medicine which this enlargement of the domain of pathology necessarily involves, has led to very great modifications of the theory of syphilis. The effects of the syphilitic poison have been more accurately observed than formerly, particularly as respects the different organs and tissues; there is an accumulation of many most important facts connected with the history and progress of the disease; its rationale has been rendered more satisfactory; and, above all, the treatment founded upon these principles, and upon enlarged and more accurate observation, is followed by much more fortunate results. The limits of this report will not admit of a comprehensive essay on the subject; but, in recapitulating the more recent investigations, we shall avail ourselves of the opportunity to place before our readers a connected view, as far as practicable, of the present state of pathology and practice in this proteiform disease.

No writer on the subject of syphilis, since the period to which we have alluded, has carried out the principle, that it is essentially a poison received into the blood, more consistently or more successfully than Mr. Lane.‖ This gentleman, holding the opinion, with the best authorities, that gonorrhœa is produced by a poison distinct from that of syphilis, and is not followed by secondary symptoms, maintains that there is but one specific poison which causes the varied symptoms of the disease; that the effects of this poison on the economy depend in a great measure upon the *quantity* that may happen to be absorbed; that the poison is capable of being carried out of the system with the secretions; that the disease is, accordingly, curable without mercury; and that mercury and other antisyphilitic remedies act by exciting the organs of secretion and excretion to increased efforts at elimination. We refer to these views, published so long since, because they have not attracted that attention, from subsequent writers, which their importance and the mode in which they are worked out by the author would warrant. The admission of "quantity" especially, as an element in the explanation of the effects, clears away many anomalies, particularly when viewed in connexion with the variable

* Lib. cit. p. 177. † Idem, p 85. ‡ Lib. cit. p. 317. § Vorlesungen über die Physiologie und Pathologie des Blutes. Leipzig, 1845. Translated by Dr. Posner from the Lancet, 1839-40. ‖ A Course of Lectures on Syphilis, Lancet, 1841-2.

action of the organs of secretion, and the power of the poison to reproduce itself while circulating in the blood.*

The existence of a syphilitic poison, or poisons, its absorption, its passage into the blood, the poisoning the economy by its presence, its specific nature, its inoculability, and the special character of its effects, physiological and pathological, are facts respecting which there now appears to be no remaining doubt; and whether an identity of cause be admitted or not, the symptoms and effects are in the highest degree variable, according to the period when they are observed, the nature of the tissues attacked, and the constitution and temperament of the patient. For a long period two groups of symptoms have been recognized, under the denomination of primary and secondary symptoms; but of late years, M. Ricord, finding that many of the latter appear to indicate a deeper affection of the tissues than others, especially of those parts which are least accessible to morbid poisons, has arranged the whole into three groups, viz. primary, secondary, and tertiary symptoms.

§ I.—*Classification of Venereal Symptoms.*

That our readers may appreciate the relative importance of several of the elaborate papers about to be reported on, and may more readily trace the relation of the various subjects to each other, and to those which must be omitted, or very cursorily alluded to, we commence with the *classification* laid down by M. Payen and some other writers in recently published papers.† This is the more necessary, in order that the views of the French pathologists may be understood as to the employment of remedies in the different forms and stages of the disease. The term *venereal* is employed generically, and the term *syphilis* specifically.‡

2. By *primary venereal symptoms* are understood those which result from the local application of the poison, or poisons, manifesting themselves by—1, a special inflammation with a discharge, or gonorrhœa, constituting, in the male, an inflammation of the glans penis, of the prepuce, and of the urethra; in the female, a vaginal, vulvo-vaginal, vulval, urethral, urethro-vulval, or urethro-vulvo-vaginal inflammation of the mucous membrane, and an inflammation or superficial ulceration of the os uteri;‖ and in both sexes, a gonorrhœal discharge from the anus, from the nipple, the eyes, nose, &c. 2d. An ulcerative inflammation in those parts of the mucous membrane which cover the genital organs, the interior of the mouth, or the extremity of the rectum, constituting chancres on the glans, on the internal surface of the prepuce, urethra, vulva, labiæ, vagina, cervix uteri, interior of the mouth, and internal surface of the rectum; or in divers parts of the skin which have been accidentally deprived of their epidermis, and especially on the integuments of the penis, testicles, abdomen, or breast; where chancres develop themselves from actual contact with the syphilitic poison. Amongst these primary symptoms bubo may also be enumerated; which is the direct consequence of a chancre, and of certain humid pustules which occur in the female after an infectious connexion.

3. By *secondary symptoms* are understood those which result from the absorption of the poison and a general contamination of the blood, either accompanying the primary symptoms, or developing themselves at some period afterwards. These occur especially on the skin, the mucous surfaces, the iris, and in the testes.

Those which occur on the skin are—1. The various cutaneous eruptions, comprising exanthematous, vesicular, bullose, pustular, papular, squamose, maeu-

* A Course of Lectures on Syphilis, Lancet, July 5, 1842. † Rev. Med. Dec. 1845.
‡ Miller's Practice of Surgery, 1846, p. 501. ‖ Miller, Lib. cit. p. 512.

lose, and tubercular syphilitic eruptions. 2. Rhagades or fissures, a variety of straight, lengthened, small ulcerations, occurring on the palms of the hands, on the soles of the feet, at the anus, and around and between the toes and fingers. 3. A species of chronic inflammation at the base of the nails, leading to the loss of the nail, and sometimes producing very deep ulcerations. 4. A falling off of the epidermis in scales, leaving the papillary body nearly naked, particularly as the scales concrete and detach themselves from the palms of the hands. 5. Alopecia, or loss of the hairs of the body and head, with or without desquamation of the epidermis of the part. 6. Syphilitic gourmes, a species of chronic boil, appearing in the form of soft tumours, at first nearly indolent, then becoming painful, ulcerating and discharging a core of mortified cellular tissue, frequently of considerable size; whence result wounds and deep irregular ulcers, with large, thin, ragged edges. 7. Nodosities, or cutaneous tubercles, consisting of limited thickenings of the skin, which increase, then crack, and give place to inveterate ulcers. 8. Ulcers, or consecutive chancres, which appear on various parts of the tegumentary envelope, especially where its tissue is thin and delicate, as at the nipples and eyelids; also in situations where it is habitually moistened by an abundant transpiration, as at the umbilicus, the perineum, the armpits, and, especially in females, in the sub-pubic region. 9. Excrescences, or tumours, formed by the development of the subcutaneous cellular tissue, and by the prolongation of the skin, as condylomata. 10. Vegetations, fleshy or ulcerous productions which affect the dermis, to which they are attached by a base, or more or less narrow pedicle, and which bear the names, chiefly on account of their various forms, of cauliflower, strawberry, or raspberry excrescences, and are most frequently seated at the periphery of the sexual parts and the anus.

The symptoms of secondary syphilis which occur in the mucous membrane are equally numerous, but they are limited as to their site in a way which meets with no anatomical explanation; as, for instance, to the mouth and throat as far as the inferior part of the pharynx, to the terminal part of the mucous membrane of the rectum, &c. 1. Secondary venereal ulcers are sometimes observed on the globe of the eye. 2. Ulcers, or chancres occur in the nose, frequently with thickening of the olfactory mucous membrane, and a sanious and fetid suppuration, constituting syphilitic ozæna. 3. In the mouth and throat, upon the tonsils, pharynx, glottis, larynx, inner surface of the lips and fauces, sometimes superficial, sometimes under the form of simple or indurated, or even phagedenic chancres and ulcerations. 4. At the anus, or at the termination of the rectum, ulcerations, redness with granulation, thickening, and pustules are met with. 5. In the sexual parts—in females—at the os uteri and in the vagina—chancres and syphilitic excoriations; within the labiæ and nymphæ—ulcers, pustules, and excrescences;—in males—between the glans and the prepuce, or on the glans, or the internal surface of the prepuce,—ulcers, pustules, and excrescences of various forms.

To render this account of the secondary symptoms of syphilis more complete, we have to include syphilitic iritis, the existence of which cannot be disputed, and probably the venereal testis, which must be distinguished from gonorrhœal orchitis. These two morbid states are said to establish a transition between secondary and tertiary symptoms.

4. The *tertiary symptoms* are also constitutional. They develop themselves later, and are characteristic of syphilis even more inveterate, and of a constitution more deeply poisoned; that is to say, affecting parts which are of the most difficult access to its influence. Among these are enumerated nodes, gummatæ, deep-seated tubercles, periostitis of the tibiæ, ulnæ, clavicles, cranium, or sternum, exostoses, pains in the bones, eburnation, caries and syphilitic

necrosis, and contraction of the limbs; and also deep ulcerations of the velum of the palate, nasal fossæ, &c., which are distinguishable from the secondary ulcerations by their highly destructive character.*

5. As respects this classification of symptoms, it may be remarked, that many of the writers before us still group the secondary and tertiary symptoms together under the term "Constitutional Syphilis," or, after the example of Desruelles, as "Consecutive Venereal Disease." The opinion that the first and second classes of primary symptoms, or gonorrhœa and chancre, depend upon different poisons is, in consequence of the results obtained by inoculation, more generally admitted than at any former period; and although, in the above classification, the affections of the skin and of the mucous membranc are enumerated separately, practical writers find themselves under the necessity of referring many of the symptoms to "muco-cutaneous" surfaces, owing to the two so insensibly blending with each other. It should not be omitted that many of these local affections, although generally occurring in one of the tegumentary membranes, are occasionally found in the other, as in the case of warts; which, although for the most part an affection of the skin, are met with on the mucous membranc,† as mentioned by Mr. Parker and others.

Again, Mr. Parker and other writers recognize primary and secondary warts and vegetations, the former the result of irritation from gonorrhœal discharges and syphilitic sores, and the latter arising from the constitutional contamination; the whole of which are classed together as condylomata, and the differential diagnosis between primary and secondary condylomata is regarded as of the greatest importance. Professor Miller considers that condylomata pertain to the three classes of symptoms, and that they may also possibly be communicated by a distinct variety of poison, being attended with a peculiar exanthematous eruption.‡

Professor Miller§ and Mr. Lane take a very simple view of the production of tertiary symptoms; they hold that if the poison be fully eliminated during the outbreak of the secondary symptoms, the disease is at an end; if the elimination be incomplete,then the affections of the bones and of other tissues make their appearance at a more remote date.

M. Ricord's general views have been brought so fully before the British surgeon that we shall confine ourselves to a very limited notice of them. His remarks on tertiary symptoms, as a class, are perhaps the most important; These, according to Ricord, may be said to be essentially characterized by not being transmissible hereditarily; in which view Mr. Parker participates. He believes the constitution to be deeply modified, after passing through the different stages, from the first manifestation of the primary sore to that of the tertiary disease; and that although the secondary symptoms may not have been perceived, or may have been forgotten, and tertiary symptoms supervening may appear to occur primarily, such is never the case. When transmitted hereditarily, secondary symptoms appear within five or six months after birth, and subsequently disappear, whether treated or not, and accordingly they may never be recognized by the parents.

M. Ricord takes great pains to controvert the notion which has more or less prevailed, that the symptoms designated as tertiary are caused by the action of mercury, or are the result of the combined influence of mercury and syphilis. They have been repeatedly observed in persons who were never submitted to a mercurial treatment; a fact, M. Ricord observes, which decides the question.

* De l'Emploi de l'Iodure de Potassium dans les Maladies Syphilitiques. By M. Payen. Revue Méd. Dec. 1845, p. 457. † The Modern Treatment of Syphilitic Diseases, by Langston Parker, Esq., 1845. ‡ Practice of Surgery, p. 528. || Lib. cit. p. 513.

Tertiary syphilitic symptoms, M. Ricord proceeds, rarely manifest themselves within six months of the primary affection; this being the inferior limit. As to the superior one, it is impossible to fix the longest term after which these may appear. They have been known to occur ten, fifteen or twenty years after infection, or even after a still longer period; but it rarely happens, when the interval is so lengthened, that the patient has not experienced some intermediate symptom. There has nearly always been some local ailment, notwithstanding that the general health has been excellent. Suddenly, a tibia becomes painful, a testicle swells or melts, or an exostosis appears. A syphilitic exostosis has, however, never been known to develope itself eight, ten, or fifteen days after the manifestation of a chancre. In some rare cases, M. Ricord has seen patients at the third, fourth, or fifth month present phenomena which occupied a medium position between secondary and tertiary syphilis, and which, subsequently, became evidently tertiary; but they were exceptional cases. One of the principal characteristics of tertiary syphilis is its tendency to concentrate itself in the internal structures, and tertiary symptoms are more serious than secondary, for the older syphilis is, the more formidable it becomes, and the more firmly does it establish itself in the economy which it deteriorates.

Although the unity of the syphilitic virus is the prevailing doctrine, there are still advocates for that of a plurality of poisons. Miller regards the latter as not improbable; but he considers the question at present involved in much uncertainty. Whether there be one or more poisons, Miller, Parker, and other writers on this side the Channel, since the publication of Carmichael's work, arrange the primary sores under distinct heads:—as, 1, the simple venereal ulcer; 2, the ulcer with elevated edges; 3, the Hunterian chancre; 4. the phagedenic ulcer, the sloughing ulcer, and the sloughing phagedena; each variety of sore having its peculiar train of secondary symptoms; and the best practitioners admit the advantage which has resulted from this discrimination. Mr. Carmichael's views have been too long before the profession to admit of more than a reference to them in the present report.

§ II.—*The Diagnosis of Syphilis.*

6. Amidst a pile of papers on the symptoms and pathology of syphilis, as it affects particular structures and organs, to some of which we shall presently refer, we have an article before us which purports to describe what is *not* syphilis. It is well understood that all sores on the genitals are not venereal, and also that sores caused by impure sexual intercourse are not necessarily so.* The memoir in question is by M. Diday,† surgeon in chief to the Venereal Hospital at Lyons, on a simple inflammatory state, occurring after primary symptoms and *simulating* constitutional syphilis. M. Diday states that two, three, four, or six months after gonorrhœa or chancre we frequently see excoriations and fissures of the fundament, sensibility of the throat, vesicles at the entrance of the nares, &c., which not being syphilis, are well calculated to deceive the practitioner.

These depend upon a special pathological condition, and are most likely to supervene when the chancre or gonorrhœa has persisted for a long period, and more frequently follow the latter than the former, the disease making its appearance mostly in the spring. The symptoms are—1. *Redness and clefts at the margin of the anus.* If slight, there is smarting, with heat, and pruritus, increased by every cause of irritation. If the affection is seated higher up, the symptoms are less continually harassing, but there is pain, renewed

* Miller, lib. cit. p. 514. † Gaz. Méd. de Paris, No. 16, 1846.

every time the patient evacuates the rectum, and a discharge of blood, pus, or serum, with tenesmus and erections, constituting the symptoms of fissure of the anus. There is sometimes an eruption analogous to eczema, and sometimes two or three very superficial fissures; sometimes only circumscribed patches of redness, the local appearances being by no means proportional to the inconvenience and obstinacy of the symptoms. 2. *Redness of the posterior fauces and pharynx.* This is attended with a degree of dysphagia, a slight sensibility rather than pain in the act, the patient stating that he feels the throat constantly dry; on pressure with the finger above the angle of the jaw slight pain is produced, and some of the cervical glands are sometimes swelled. These symptoms increase under the influence of cold and humidity, but are unaccompanied by fever. The patient is always convinced that they depend on syphilis, and the practitioner is too apt to participate in this opinion. The most attentive inspection developes two morbid appearances only: a remarkable dryness of the whole surface, and a deep red tint, its distinctive character being, that it extends uniformly over the pillars, the inferior part of the velum, the tonsils, and the posterior wall of the pharynx, and is unaccompanied with any appreciable swelling. 3. *Ulceration of the tongue and lips.* These have only the size and duration of simple aphthæ, and yet they are chancres in the imagination of the patient. They are chiefly at the edges of the tongue, and in the cul-de-sac, which the mucous membrane forms after covering the gums. Their base is for the most part red; sometimes becoming grayish; but this continues only two or three days, and is replaced by an imperceptible cicatrix. The special seat and the fetidity of mercurial ulcers prevent the two being confounded. They generally coexist with the state of the throat just described, but may occur independently; and are liable to disappear and reappear for a long period. 4. *Erythema and vesicles of the prepuce, glans, and vulva.* When these occur, they have a great tendency to relapse. The affection may terminate in five or six days, and not recur till after one, two, or three months, and these relapses may occur for one, two, four, or more years. Nothing will prevent or retard this; it becomes a habit. It has the nearest analogy to *herpes præputialis.* Sometimes a slight redness replaces the vesicles, but it has no coppery appearance, and goes off in a few days to return, a characteristic which is never met with in syphilitic exanthems. In the female, the most projecting part, the free borders of the nymphæ, are most frequently affected. 5. *Excoriations at the entrance of the nostrils.*— This occurs with the other symptoms, but less frequently, and is attended with less inconvenience. One or two very superficial fissures are remarked at the orifice of the nares. Sometimes they are accompanied with an erythematous redness of the upper lip, resembling that which occurs in coryza, but less vivid, and more circumscribed; there is some itching, an intense smarting when the finger is applied, or when the nose is blown strongly, and a slight swelling of the corresponding nostril.

The symptoms here described do not always occur alone, nor always together, in the same subject. If we seldom meet with one only, the whole are much less frequently observed together. One of these affections generally forms the dominant element of the malady. Sometimes the congestion is directed towards the anus; sometimes it is the throat which is particularly affected. If two of the forms coexist from the beginning, whenever there is a relapse there is almost always a return of the two lesions simultaneously; the only exception which M. Diday has observed to this rule is in the eruption on the prepuce, the intervals of which are so much longer than those of either of the other forms.

M. Diday regards the disease as a periodic congestion of the mucous

orifices, which may, however, be complicated with constitutional syphilis, when it does not maintain its simple state, but degenerates and changes its symptoms, as also its name and treatment; thus, the cracks in the anus become rhagades, or the redness of the throat a consecutive ulceration. Under these circumstances the disease has in no instance preserved its primitive character, but runs its course parallel to that of the constitutional syphilis. This is easily understood, since syphilis generally manifests its effects in the same spots, and it is natural that its symptoms should modify, or at least mask those of a much slighter affection. The distinction between syphilis and the disease in question is as follows:

1st. Although the seat of the one is the same which is frequently occupied by the other, the appearances presented by the two affections are never the same. In the inflammatory affection the redness is never coppery; the ulcerations have a red base, the vesicles are not surrounded by an areola of a specific tint, and the fissures have no tendency to extend to any depth.

2d. The itching is a diagnostic sign of considerable importance; it is extremely vivid and obstinate in most of the affections here described; whereas the absence of heat and itching of the surface is one of the most constant characters of a syphilitic eruption.

3d. The progress is not less distinct. Constitutional syphilis, once established, and not treated, persists or becomes aggravated. If, under some circumstances, it passes away spontaneously to return again, this is an exception to the rule, and does not occur until after it has continued four or five weeks. In the disease before us, the early disappearance of the symptoms, without treatment, is not the exception but the rule, and a rule as constant as that of their frequent return.

4th. Syphilis frequently manifests its presence by eruptions at the orifices of the mucous canals; but if these are not treated, its effects are in general not so limited, and in time there occur eruptions, mucous tubercles, exostoses, alopecia, ulcerations on the surface of the body, nodes, diseased testis, &c. Nothing of this kind happens in the inflammatory affection; the symptoms never invade any other region, nor become of a more serious character.

5th. The first appearance is never accompanied with fever, general uneasiness, pains in the loins, lassitude, or headache, which frequently happens on the first appearance of secondary syphilis. Whatever may be its duration, it never produces the same degree of debility, nor that particular appearance of the skin and visage which results from syphilis.

6th. If secondary syphilis is sometimes cured without mercury, and, on the other hand, if mercury does not always cure it, this, at all events, happens in a minority of cases only, and, in fact, the necessity for mercury exists, and its efficacy is still the rule. Mercury never cures the affections described by M. Diday; the most rapid cures are obtained where the patients have never taken it. Finally, the iodide of potassium and preparations of gold do not succeed better than mercury.*

7. The following remarks also appertain to the diagnosis of syphilis:—A woman, aged 32, presented condylomata at the vulva and anus. M. Bérard does not consider this affection always as a sign of constitutional syphilis, nor as constantly syphilitic. He believes that it may occur in subjects who have had no other disease but a non-specific blennorrhagia. The editor affirms with many other writers, that these mucous pustules are always an indubitable sign of constitutional syphilis succeeding to an indurated chancre, whatever part of the body may have been the seat of the primary affection.†

* Lib. cit. No. 17.

† Gazette des Hôpitaux, Aug. 8, 1846.

§ III.—*On the Contagion of Syphilis.*

8. Much discussion has taken place in the different journals, on the laws of the transmission of syphilis from one individual to another. It is a matter of considerable surprise with us that there should have been any question of late years as to the contagiousness, under favorable circumstances, of secondary syphilis, and especially as to its communicability from a diseased infant to a nurse; but it is evident that by some practitioners this is not regarded as a settled question. Mr. Acton does not believe it possible for a syphilitic infant to affect a healthy nurse.*

It was the late Dr. Wallace who first insisted on this doctrine; Ricord positively denies it. The facts before us go very far to affirm the question, and, as far as we can collect, the general opinion on this side the Channel leans to this view; but Mr. Acton, following M. Ricord, maintains that condylomata and other secondary symptoms are not inoculable. He has tested this recently, and he warns surgeons against the innumerable sources of error, giving instances from his own practice. He refers particularly to a case recorded by himself, where a child, hereditarily affected from the father, never affected the mother who suckled it;† but we doubt much if one negative proof will have much weight with our readers on this important point.

9. *Syphilis as contracted from Nurslings.*—The first paper before us by Dr. Egan,‡ on the identity of the constitutional symptoms which succeed to the absorption of the virus from a syphilitic nursling with those which follow its introduction into the system by the usual channel, is illustrated by a series of cases. In the first case the child was born apparently healthy; eight weeks afterwards syphilis appeared. An ulcer then presented itself on the breast of the nurse, and secondary syphilis occurred. No effect was produced by inoculating the arm with matter from the ulcer. In the second case the child was born apparently healthy; about ten weeks afterwards a suspicious rash appeared, succeeded by blisters and fissures about the mouth; ulcers occurred on the nurse's breasts, and then a scaly eruption, and other secondary symptoms. Both cases were cured by antisyphilitics. In the third case, the woman was a dry-nurse, being disqualified by age for suckling. The child was unhealthy, and affected with sores, of a brownish colour, about the nates and mouth, and a constant flow of saliva. A scratch appeared on the neck of the nurse, whether produced by a pin or torn by the nails of the child was uncertain; but being in the habit of bringing the child's mouth into contact with the affected part, in order to induce sleep, the disease was believed to be communicated through the abrasion, and the local effect was succeeded by an eruption, cured by antisyphilitics.

Dr. Egan remarks, that the syphilitic virus received into the constitution through any other than the ordinary channel, gives rise to a more intractable disease. In two of the above cases, relapses, after apparent cure, formed a prominent feature. Dr. Egan did not succeed in these cases in producing the characteristic pustule which so often follows the introduction of matter from a primary ulcer, although he has made repeated trials; but he considers that the observations of the late Dr. Colles render it unquestionable, that certain constitutional affections are capable of propagating a disorder which differs in none of its essential characters from the secondary effects resulting from the ordinary syphilitic ulcer.

* The Med. Times, Feb. 21, 1846, from the Lancet.

† Lancet, Aug. 1, 1846.

‡ Dublin Quarterly Journ. May 1846.

In a trial which took place at Cork, evidence was given by Dr. O'Connor and Dr. Bull that a child affected with syphilitic eruption may convey the contagion to the nurse.* Julia Walsh received a child to nurse which was observed to have some sores on the mouth, around the anus, and on the scrotum. It was also remarked that the mother of the child had an eruption on her skin, and a sore on her breast. Shortly afterwards, the nurse Walsh, having perceived a sore on her nipple, and that the rash on the child became more general, went to a quack, who gave her twelve pills, which made her mouth sore; she also remonstrated with the father of the child on her condition, and he accompanied her to the man, promised to pay him for curing the nurse and child, and at the same time to put his own wife under his care; from all which it may be inferred that he was of opinion that the three were suffering from the same complaint. Shortly after this, Walsh went to Dr. Ahern, who at once pronounced that both the nurse and *child* laboured under syphilitic disease. The symptoms, as appears from his testimony, were an ulcer on the nipple, with a syphilitic rash on the breast, and ulcers at the angles of the mouth; and when she presented herself some time afterwards to Dr. Bull she had, in addition, condylomata on the palate and round the anus, with tubercles on the pubes, several of them with yellow ulcerated heads.

In this state she came into the workhouse hospital, where she remained about six weeks. She was soon afterwards delivered of a child, which was covered with a syphilitic rash, and which died shortly after its birth.

Some weeks after the wife first complained her husband was taken ill. His symptoms were several tuberculated ulcers on the dorsum of the penis, with desquamation of branny scales all over the body, and loss of hair. When the husband accompanied his wife to the quack, and to Dr. Ahern, he did not complain of himself, and when he did feel ill he made no concealment. A child of Walsh's, who had been previously healthy, also got condylomata round the anus and on the palate, which her mother attributed to her having been fed with the same spoon as the diseased child. She never had any symptoms of syphilis but these, and was in other respects in good health.

Dr. M'Ever† took a different view of this case; admitting that the father of the child had syphilis some time before his marriage, this would be quite sufficient to account for the whole train of events; he denies that the nurse's disease was syphilitic. It appeared to result from the over use of mercury;‡ having treated the sore on the mother's breast, he affirms that it was simply a case of eczema. The mother, it is also stated, denies that the child had any sore or rash on its body, and Dr. M'Ever finds nothing so common as physicians and surgeons pronouncing sores and rashes to be syphilitic, when, in reality, they are not so, and require a very different mode of treatment. If the nurse laboured under syphilis, she must have been affected from some other source.

The parents were married five years before the child in question was born, and two perfectly healthy children preceded it, so that the admission by the father that he had syphilis before marriage goes for nothing.§

In this controversy numerous authors are quoted on both sides, especially Hunter, Ricord, and Acton, against the doctrine of secondary syphilis being contagious, but we must confine ourselves to the facts advanced.

Dr. O'Connor, in his rejoinder, considers that he establishes the following facts.‖ That the mother had an intractable sore on the breast; that the child, when given to nurse, had a rash on the body and sores on the lips, which were shortly afterwards pronounced by a physician to be syphilitic; and that the nurse afterwards became affected with syphilitic disease, and gave birth to a

* Lancet, July 4, 1846. † Ibid. June 20, 1846. ‡ Ibid. July 4, 1846.
§ Ibid. Aug. 15, 1846. ‖ Ibid. July 25, p. 110.

child which died of that affection. Dr. O'Connor avoids the question whether the disease existed in the primary or secondary form, or both, in the child.

A paper by Dr. Hector Gavin includes the history of a case where a man and his wife, purporting never to have had syphilis, had a first child born perfectly free from any trace of the disease, subsequently to which, the diseased child of a woman known to have had syphilis, but *supposed* to be cured, was placed to the wife's breast, the nipple being "cracked" at the time, and the disease was communicated.*

An anonymous writer in the 'Medical Times'† publishes the following case in proof of *the contagiousness of syphilis in its secondary forms.* A bachelor was treated for gonorrhœa. In about six weeks he was pronounced well; but three months subsequently it was discovered that he had secondary syphilis. He was put under mercurial treatment, and got well. Having continued perfectly so for five or six months, he married, in the month of September, 1842. In a little better than a year from the date of the marriage the wife lay in of a healthy child, which has never experienced any interruption of health. The wife fell with child a second time, and when about seven months gone, her medical attendant was called in on account of a sore throat, which was found ulcerated, and the surgeon had no doubt that it was a case of secondary syphilis. From the information that the surgeon could collect, by the most efficient inquiry, he came to the conclusion that the patient had not a primary sore; besides which she was a person *strictly moral*, and above all suspicion.

Inquiry was then made into the husband's state of health, when the details of the affection before marriage were learned; and it was further discovered that he was then labouring under an inflamed throat, with a sense of dryness and constriction in the fauces, and that there was also a papular eruption upon the chest and neck, invading posteriorly the scalp under the roots of the hair. The husband had never been guilty of any infidelity towards his wife, and was positive that he never had, even before his marriage, any ulcer or excoriation upon the penis; and having been so long well, he could not suppose that he was labouring under secondary symptoms, and would not submit to treatment, trusting that the affection was merely temporary, and would vanish without medical aid. The wife, however, remained under a mild course of treatment from the 26th of November to the 26th of December with manifest advantage. On the 5th of January she was delivered of a male child, apparently healthy, and of the full time, or nearly so. On the third day the child was found covered all over with a papular purple eruption. It was a clear case of syphilis. The child died the third day from the appearance of the eruption. The mother's throat, which had been mending under the treatment before her accouchement, began to get worse soon after she left it off; and it was deemed advisable, about a month after her delivery, to put her under a mild course of mercury. A slight ptyalism was produced, and kept up for nearly two months, when a cure was effected. The husband submitted to a similar course of mercurial treatment, and was effectually cured. There has been no reappearance of the disease in any form; but the wife, who became pregnant again, lay in of a six months' still-born child, without any assignable cause for such an event. Her health, as well as that of her husband, continues good.

Mr. Price, of Margate, records the case of a woman who had syphilis, which commenced in the nipple, from nursing an infected child; she gave birth to one child affected with the disease, and to another dead child. The child from whom this woman derived the disease had a very sore mouth and smelt

* Lancet, July 18, 1846. † July 28, 1846.

very badly, and its father was known to have secondary syphilis of an aggravated character. Another respectable married woman, six weeks afterwards, applied to Mr. Price, having syphilis, with a large sore on one of the nipples, and it turned out that this woman was nursing the same child which had affected the former nurse. This woman's own child also had the disease, and Mr. Price calls attention to the singular fact that the children never sucked from the same breast; her own child never sucked the affected breast, and therefore could not have been affected from the ulcer on the nipple. This woman affected her husband. Two years and five months subsequently she gave birth to another child, this was affected with syphilis; twelve months subsequently another child was born similarly affected; and after this the mother was cured with iodide of potassium. Mr. Price makes but little comment on the facts, which are certainly among the strongest we have seen in the affirmative of the question. Several very remarkable cases by Lallemand, Dr. King, and Dr. Maenicke, will also be found in the twelfth volume of the 'Medical Times.'*

Dr. Egan is of opinion that a nurse may continue to suckle a diseased infant with perfect impunity, so long as no abrasion of cuticle, or ulceration in or about the nipple occurs: but Dr. Colles was of opinion that the disease may be communicated from an infected child by mere contact.

Dr. Colles makes the curious remark, that he has never seen or heard of a single instance of a syphilitic infant, although its mouth were ulcerated, producing ulcerations on the breast, when suckled by its own mother; whereas, very few instances have occurred where a syphilitic infant did not affect a strange, hired, wet-nurse, previously in good health. This observation corresponds with an opinion held by the late Dr. Wallace, that an individual ceases to be susceptible of inoculation from his own primary sore as soon as his constitution becomes affected, although symptoms may not have made their appearance.†

Dr. Egan, who supports Mr. Carmichael's opinions, has met with very few exceptions to the rule, that certain secondary and tertiary symptoms succeed to certain forms of primary sores; and in the affection produced by a syphilitic child in a healthy nurse, it appears that when once a class of symptoms present, others, if they show themselves at all, follow in a natural order. Thus in Dr. Egan's first case, to which we have referred, a pustular eruption appeared, which was eventually followed by a form of sore throat peculiar to that particular class; and in the second case, a scaly eruption was succeeded by an excavated ulcer of the tonsil.

10. *Syphilis communicable to the Infant by the Milk.*—Most writers, including Swediaur, denied that syphilis is communicable to the child by the nurse's milk, but Mr. Lane and Mr. Parker enumerate this as one of the modes of contamination; even Ricord has admitted it, and the cases above quoted from Mr. Price are confirmatory of this view. For obvious physiological reasons the occurrence must, however, be very rare.

11. *Syphilis in the New-born Infant.*—This part of the subject has been treated of by Dr. Egan,‡ who remarks that the symptoms commonly present at birth are desquamation of the cuticle, a senile expression of countenance, and rarely a few eruptive blotches; with these symptoms, the history of the case is necessary to form a diagnosis. But when a child is born apparently healthy, the diagnosis is clear on the supervention of a peculiar train of symptoms. The characteristic snuffling, the puckered mouth, the position of the eruption round the lips and anus, in addition to the peculiar varnished

* Pp. 81, 176, 422. † Lane's Lectures, Lancet, June 18, 1842.
‡ Dublin Quarterly Journ. May 1846.

and fissured appearance of the parts from which the scales have faded, will seldom fail to convert a suspicion into positive certainty.

These, however, are not the only symptoms of syphilis with which new-born infants are frequently affected. Professor Dubois gives a case in which an infant, at birth, had a pustular eruption in full suppuration; the tibia of the left leg was necrosed, and there was an abscess in the thyroid body.*

12. *Syphilis, in its Secondary Forms, the Cause of Abortion, and of the Death of the Fœtus in Utero.*—There are practitioners who deny this. Mr. Acton seems to doubt it. At a meeting of the Medico-Chirurgical Society, on the 9th of June, Dr. Snow said he had seen several instances in which the fœtus died of the effects of syphilis, either in utero, or a few days after birth. One patient, whose husband had suffered from syphilis before marriage, had had five children born about the end of the eighth month. Of these, only the last was living, and it had been treated as soon as it was born with mercurial ointment to the knee, in the way recommended by Sir B. Brodie.† Of the others, one or two were still-born, and the rest died three days or a week after birth, the last which died having syphilitic eczema. Another patient had three very healthy children, which were still living; and after the birth of these, the husband contracted syphilis; he and his wife had the disease in the secondary form, and the treatment for this was scarcely concluded, when the wife became pregnant again. The child was still-born at the full period, and there was effusion of blood into the serous cavities, particularly in the peritoneum. In this discussion Mr. Lloyd and Mr. Wade stated, that cases of abortion and of the death of the fœtus shortly after birth were more common when the disease affected the father than when the mother was the subject of the complaint. Why it was so, it was difficult to explain. Mr. Wade expressed his surprise at hearing Mr. Acton state that syphilis was not a cause of abortion, for he was fully convinced that it was. Several cases had come under his care, in which women aborted two or three times successively in consequence of syphilis, but who afterwards bore healthy children, in consequence of having been placed under an extensive course of mercury. Of course these remarks applied to the secondary form of the affection.

It is again a matter of surprise with us that any doubt should exist on this point; surely no man of any extent of practice has failed to meet with instances. Syphilis has been recognized as a cause of abortion by most practitioners of midwifery, and, in our own practice, several unequivocal examples have occurred. The following case will illustrate this point, in reference to condylomata.

A young gentleman had symptoms which were pronounced to be pseudo-syphilis by two eminent surgeons; these disappeared under treatment, and his marriage with a young lady of the highest respectability was sanctioned by his surgical advisers. A few months after his marriage, he presented himself with round copper-coloured tubercles on the dorsum of the penis, for which he had been taking biniodide of mercury, from a prescription he had formerly received. His wife was at this time affected over the whole of the labiæ, the perineum, and around the anus, with a crop of mucous tubercles, and a fetid discharge. The local symptoms were quickly relieved, she was pregnant, and aborted at about six weeks. About this time a copper-coloured, exanthematous eruption appeared over the arms, chest, and other parts of the body; an antisyphilitic course was resorted to, the eruption disappeared, and the husband protested against continuing the remedies, as being unnecessary. The wife became pregnant again, and aborted at about four or five weeks. Believing the abortions depended upon debility, she then went out of town

* Medical Times, Feb. 7, 1846. † Vide supra, p. 198.

for the benefit of her health, became pregnant again, and at the expiration of six months gave birth to a dead child with a desquamated cuticle. The chimera of pseudo-syphilis was now happily dismissed from the husband's mind, both himself and his wife submitted to an antisyphilitic treatment of at least three months' duration, connexion was avoided the whole of that period, the lady has since given birth to a healthy child at the full period, and both husband and wife have quite recovered their health.

We now proceed to lay before our readers some important investigations on

§ IV.—*The Effects of the Syphilitic Poison upon certain Organs and Tissues.*

13. *Syphilis within the Os Uteri.*—In consequence of several individuals affirming that they had been infected with the venereal disease by a young woman apparently in perfect health, M. Delmus instituted a very minute examination.* The exterior of the genital organs, as well as the margin of the anus, were in a normal condition. On employing the speculum, nothing abnormal could be perceived in the vagina. The os tincæ and neck of the uterus did not vary from their natural appearance in a female who had not borne children. There was nothing which indicated either inflammation or syphilis. On pressing the neck of the uterus in various directions, to ascertain the degree of sensibility of the parts, and the nature of the liquid which proceeded from it, an almost transparent albuminous matter was observed, mixed with a whitish liquid of a doubtful aspect. Some of this matter being collected with a curette, a lancet was charged with it, and four pricks made on the thigh. On the fourth day, the wounds assumed the form of four well-marked chancres, and subsequently almost the whole body, not excepting the face, became covered with flat pustules, some dry, and the others running. The eruption rendered the woman almost hideous, and it was not until after a mercurial course of three or four months' duration, including the use of strong sublimated baths, that she was cured.

14. *The Syphilitic Testis.*—The effects of syphilis on the testis in the production of syphilitic sarcocele, or the "venereal" testicle, have been described with great accuracy by Dr. J. Helot, of Rouen.† The disease is characterized by hypertrophy, with induration of the substance of the testis, and has an essentially chronic course, generally terminating by resolution, and sometimes by atrophy of the gland.

This author remarks that the syphilitic testis is, in a manner, a symptom of transition between the secondary and tertiary stages of the disease. It does not occur during the early weeks of the primary symptoms, rarely appearing until six months have elapsed, and frequently not until after several years. Sometimes it is observed during the continuance of the secondary symptoms, but most frequently it occurs alone, or accompanied with pains in the bones, exostoses, periosteal tumours, &c.

Ricord having stated that the *causes* are those which act upon the testis, apart from syphilis, and which accordingly bring the syphilis into play; the influence of gonorrhœa on the epididymis and, by continuity of surface, on the testis, being such that a pure and simple gonorrhœa may become the cause of syphilitic sarcocele, and that a blow, a contusion, prolonged continence, venereal excesses, sometimes the tubercular, cancerous, or scrofulous diathesis, may aid the syphilitic diathesis, and become the exciting causes of the venereal testis,—M. Helot declares that he has seen nothing to justify these assumptions. Dupuytren taught that the spontaneous development, without any known cause, of a tumour of the testis, where syphilitic symptoms had occur-

* Gazette Méd. Oct. 18, 1845. † Journal de Chirurgie, Avril 1846.

red, would lead us to determine, *à priori*, the nature of the affection; and Dr. Helot further affirms, that without contesting the predisposition acquired for the syphilitic action by the existence of gonorrhœa, or epididymitis, it is a remarkable fact, that most frequently it is not the testicle which has been affected by the gonorrhœa that becomes syphilitic, and it not infrequently happens that the syphilitic testis exists on one side, while that on the other side is affected with gonorrhœal orchitis. The syphilitic testis is also met with on both sides, where there has been no antecedent gonorrhœa.

Symptoms.—In a great majority of cases, the affection commences without any pain, either in the loins or testis. The organ becomes hard, and increased in size, but it is not by a gradual and slow development that it becomes round, pyriform, comprising both testis and epididymis, as described by Sir A. Cooper and Dupuytren; the description given by these surgeons applies to the affection when completely formed. It arrives at two or three times its original volume in the following manner. At the commencement, at one or more points on the surface, one or two points of induration are felt, resembling cartilage; these nuclei extend, approach each other, unite, and ultimately involve the whole organ. The indurated points are sometimes limited to one side of the organ, while the other maintains its consistency and normal elasticity. When the partial indurations have involved the whole organ, the testis has a uniform hardness, generally accompanied with hypertrophy; we then observe it increase in volume, not only without diminution of its characteristic hardness, but generally the induration also increases.

This evolution by a partial induration, first noticed by M. Ricord, is not the only way in which the disease developes itself. Sometimes the change takes place, from the beginning, over the whole organ at once; it loses its elasticity and suppleness, and, at the same time, its sensibility; as it increases in volume, the uniform induration becomes more marked, the tumour becomes rounded and pyriform, and arrives slowly at three or four times its original volume.

According to M. Ricord, the epididymis and the cord generally remain quite free from the disease which affects the body of the testis. Still, Dr. Helot observes, both are occasionally affected, of which fact he gives illustrations; but when the epididymis has been free from the commencement, he has never seen it, as asserted by some authors, after the testis has become completely indurated, taking on the same condition, and becoming confounded with the testis, forming one and the same pyriform tumour. Ricord has made the same remark.

Ricord has seen the affection without increase of volume, Dr. Helot has never observed this; at the same time, the testis never acquires the enormous volume which occurs in some diseases. When it has attained a certain size, it remains stationary for months or years; it may even spontaneously diminish, to become, afterwards, larger than previously. Sometimes the affection will disappear in one testis, and, a short time afterwards, a similar tumour develope itself in the other. When pain occurs, its seat is not in the tumour; it is felt along the cord extending to the lumbar region. M. Ricord observes, that in some individuals these lumbar pains are excessively severe, and are peculiarly exasperated at night. According to Dr. Helot, these nocturnal exacerbations do not properly belong to the syphilitic testis, but are found in many other affections.

Duration and termination.—The duration is indeterminate, the affection sometimes continues many years; its termination is by resolution; but most frequently this result is obtained only by antisyphilitic treatment. Spontaneous resolution is only possible when the disease is recent; when it is very far ad-

vanced, and of long standing, the hypertrophy is fixed, and resolution can be obtained only very imperfectly by the best-directed treatment. M. Ricord states, that in other cases the testis may diminish in volume under the influence of treatment, even to the atrophy of the gland. The termination by suppuration has been admitted by some authors, but this mode of termination is not that of the syphilitic testis. Dupuytren does not admit it; and M. Ricord, who regards it as extremely rare, attributes it to a purulent liquefaction of a gummy tumour; he also admits a variety of syphilitic testis, which he has designated by the name of "*Gommeux*," evidently an error, which this surgeon seems since to have discovered. The gummy tumour of the testis does not belong to the true syphilitic engorgement.

M. Ricord believes that scrofula and cancer may complicate syphilis, and modify the course and termination of the syphilitic testis; with most authors, he admits the possibility of a cancerous degeneration. Dr. Helot thinks, on the contrary, that most of the facts lead to the conclusion, that the two affections remain totally distinct, from their beginning to their termination.

Diagnosis.—It is of the utmost importance to learn the history of all doubtful cases. The disease in question may be distinguished from gonorrhœal epididymitis by the circumstances which attend its origin, and the period at which it makes its appearance. In the latter, the invasion is rapid, with the ordinary signs of acute inflammation. It occurs during the continuance of the discharge, or on its suppression. In the former, the first stage is essentially chronic, and it presents itself much later, after the occurrence of the primary symptoms, constituting a consecutive affection. In the syphilitic testis the gland is hypertrophied from the commencement; in epididymitis the gland preserves its usual suppleness, volume, and elasticity. The epididymis is especially affected, and if, as an exception, the testicle itself participates, there results a much more inflammatory tumour, which may be contrasted with the chronic course of the syphilitic testis. In epididymitis the tumour is painful, frequently red, shining, tense, and the vas deferens, when it participates in the affection, is painful to the touch. In the syphilitic testis the tumour is generally indolent from the beginning to the termination, and compression of the testis, and even of the cord when it is affected, produces no pain. In the former, the affection always commences by the epididymis, and the body of the testis for the most part escapes. Precisely the contrary occurs in the latter case, although the syphilitic testis may commence by or be one of the terminations of a gonorrhœal epididymitis.

We may meet with the two affections combined, but this does not establish their identity, for two diseases may successively affect the same organ; and a testicle, the epididymis of which has been affected with gonorrhœa, may subsequently present the characters of the syphilitic testis, provided the patient has been affected with syphilis; and by no means infrequently the testis on one side is affected with syphilis, while on the other side the epididymis is indurated consecutively to an old gonorrhœal inflammation.

Thus there is a radical distinction between the two affections. M. Casteineau endeavoured to establish that the syphilitic testis is only the chronic stage of gonorrhœal orchitis. Admitting, however, that in particular cases, after the lapse of a certain time, we frequently see it in patients having been affected with gonorrhœa, although during the discharge an acute orchitis has never occurred; according to M. Casteineau, the syphilitic testis is only a gonorrhœal orchitis, primarily chronic, by which hypothesis there is a strict identity in the nature of the two affections, which Dr. Helot believes to be totally inadmissible. That a discharge may be a primary symptom of a syphilitic testis is an undisputed fact; but this is very distinct from the affir-

mation that every syphilitic testis is exclusively dependent upon an antecedent gonorrhœa, of which no proof has been given by the author quoted.* And even with those who believe that gonorrhœa, like chancre, is neither more nor less than a primary symptom of syphilis, the two affections are still distinct as respects the period of their occurrence, their symptoms, course, termination, and treatment, although not as respects their nature.

Simple *hydrocele* may be easily distinguished from the syphilitic testis; but under some circumstances the great distension of the tunica vaginalis prevents the state of the testicle being ascertained, and it is not until after the fluid has been evacuated that we can determine if the organ is swelled and indurated, and whether we have to deal with a true hydrocele or an effusion symptomatic of an affection of the testis. *Hematocele* may also readily induce error. In this case the nature of the fluid supersedes the transparency of the tumour; the thickening of the tunica vaginalis, which is sometimes as hard and resistant as cartilage, prevents that suppleness and elasticity which is so characteristic of simple hydrocele. The tunic has been known to acquire the thickness of four, five, and six lines. But even in this case the tumour is more supple and elastic than the syphilitic testis; it always gives, more or less, under the pressure of the fingers, and it is easily ascertained that the whole tumour is not solid, as in the latter disease. In general, in hematocele, with or without thickening of the tunica vaginalis, the dimensions acquired are double or triple those of the syphilitic affection. Besides the obscure fluctuation of hematocele, the fingers may recognize, at one of the points of the circumference of the tumour, generally behind, the presence of the testis, the compression of which occasions the same kind of pain as is produced by compression of the sound testicle. At this point there is also more softness and elasticity in the body of the testis not covered by the hypertrophied tunica vaginalis. In the syphilitic testis, on the contrary, not only does the compression of the tumour produce no pain in general, but even when an effusion has taken place, it is the part of the tumour which corresponds to the testis which presents the greatest hardness and resistance. Finally, the commencement and development of hematocele establish the difference. The testicle remains for a long time distinct, and easily recognized, while in the syphilitic testis, it is the gland itself which becomes developed, and when an effusion into the tunica vaginalis occurs, it is only consecutive.

The *scrofulous affection of the testis* may be confounded with the syphilitic testis. In scrofula there are two varieties of tumours, one formed by a tuberculous infiltration of the whole organ, the other by the development of encysted tubercles, either of the epididymis or in the body of the testis. We have seen that in the syphilitic testis the epidydimis is rarely affected; in scrofula, on the contrary, the alteration generally commences here, and extends to the body of the testis secondarily. The scrofulous testis developes itself by projections in relief, as if appended to the epididymis or the testis, while the indurations observed in the syphilitic affection are almost entirely confined to the body of the organ; still the difficulty of distinguishing the two is sometimes very great, especially at the commencement. In syphilis, when the induration is complete, the testicle is uniformly hard, and the hypertrophy is frequently slight; in the scrofulous affection the projections frequently lose their primitive hardness, and other parts of the organ maintain their elasticity. In tubercular infiltration the tumour is more regular, and uniformly rounded, approaching more to the syphilitic affection; but the hardness is less decided, the testis maintaining a certain suppleness, which contrasts with the

* Annales des Maladies de la Peau, Juin 1844.

cartilaginous character of syphilis, and it is seldom that the gland is infiltrated with tubercle without the epididymis being involved. We have seen that in the syphilitic testis the vas deferens generally remains healthy; that if it should become hypertrophied it increases in volume regularly over its whole extent, presenting neither projections nor inequalities, while in the scrofulous affection, especially if advanced, the vas deferens is frequently found mammillated, representing a string of beads. Although the course of both affections is essentially chronic, yet there are certain differences of some importance in a diagnostic point of view. The syphilitic testis is more indolent than the scrofulous testis, which exhibits from time to time inflammatory attacks, characterized by a sense of tension, and of pain, developed and increased by the touch. The general termination of the syphilitic testis by resolution is opposed to the termination by suppuration, which so frequently characterizes tubercles.

It is often difficult to distinguish the syphilitic testis from *cancer* of the same organ. Dr. Helot inquires, how many testicles have been submitted to the knife which might have been resolved, if their nature had been suspected? The rapid development of the tumour, its greater volume, its softness, which may be mistaken for fluctuation, and the lancinating pains, in encephaloid disease, contrast with the uniform hardness and indolence of the syphilitic testis, the growth of which has more confined limits. The vas deferens in cancer is frequently hard and unequal, and in the syphilitic testis the swelling of the inguinal glands does not occur.

Sir A. Cooper and other authors have described, under the term *schirrus of the testis*, a variety of cancer, which might more easily be confounded with syphilis, since its development is slower than encephaloid, and it presents, from the beginning, unequal indurations; but these separate indurations become more and more marked in scirrhus, which does not take place in syphilis. In spite of these characteristics, the only proof which will frequently avail the surgeon is the effect of a rational system of treatment. Dupuytren remarked that the alternations of increase and diminution in the syphilitic testis are opposed to the refractory persistence and augmentation of cancer, and that the simultaneous or successive affection of both testes gives a presumption of the syphilitic nature of the disease; and that in case of relapse, after removing a cancerous testis, it is almost always the cord which becomes affected, while in syphilis it is generally the second testis; which remark is in accordance with Dr. Helot's experience.

M. Ricord has also insisted of late, in his clinical lectures, on the differential diagnosis of these two diseases, and the editor of the 'Gazette des Hôpitaux'* remarks, that testicles reputed to be cancerous, which an antisyphilitic treatment would have rapidly cured, have frequently been removed.

Prognosis.—The syphilitic testis, having regard to its termination by resolution, is not absolutely a grave affection, although its duration is uncertain, and resolution does not occur spontaneously. When the resolution is incomplete, and the treatment has not been sufficiently long continued, relapses are by no means infrequent. When the disease has continued for a long time resolution is very incomplete, and atrophy of the organ is sometimes the result.

Pathological anatomy.—The affection, according to Sir A. Cooper and Ricord, is seated in the fibrous and cellular tissues of the testis and epididymis. It is an hypertrophy of the tunica albuginea, and of its fibro-cellular prolongations, which surround the testis, and form the compartments in which the seminiferous vessels are contained; but, according to Dr. Helot, this is a pure hypothesis, which has not been confirmed by his own researches.

* Aug. 25, 1846.

Dr. Helot terminates his memoir with the remark, that the difficulty of the differential diagnosis of tumours of the testis, and the comparative frequency of the syphilitic affection, ought to make surgeons very circumspect in pronouncing on the necessity of amputation; and he suggests that Dupuytren's example is worthy of being followed, who submitted his patients to a mercurial treatment, even when he had too much reason to suspect the cancerous nature of the affection, lest he should remove a testicle which might have been saved.

Before discontinuing this subject we may remark that, according to Breschet, Parent Duchatelet, and others, prostitutes are less prone to cancer than other females.* This fact militates against an opinion entertained in France, especially by M. Leroy d'Etiolles, that a syphilitic taint facilitates cancerous degeneration; and the opinion of M. Cruveilhier, that syphilis does not influence the development of uterine cancer, is in accordance with common experience. M. Lallemand describes, in his lectures,† cases of a cancerous appearance in various parts of the body, but having a syphilitic origin, and giving way to antisyphilitics.

The next important paper on the symptoms and effects of the syphilitic poison is one of great interest, from the pen of F. Bouisson, clinical professor of the Faculty of Medicine of Montpellier, on :—

15. *Syphilitic Tumours of the Muscles and their Appendages.*‡— F. Bouisson's attention was drawn to the subject by observing in a dead body, having evident traces of syphilis, circumscribed tumours in the substance of some of the muscles, particularly in the trapezius, and in the gluteus maximus; and upon various occasions since, he has found in the subject, and also in museums of pathological anatomy, tumours of the same nature, which had undergone divers transformations; and subsequent observation has proved that the action of confirmed syphilis on the organism may produce lesions of the muscles and tendons, constituting particular tumours, susceptible of being cured by an antivenereal treatment.

M. Bouisson first describes a case of syphilitic tumour of the sterno-mastoid, in which the syphilitic origin was evident, not only from the antecedent history, but from the particular phenomena attending the case—a case of syphilitic tumour of the vastus externus, which coexisted with a lesion of the same nature of the osseous system is also detailed, and these two cases serve as an introduction to the subject; leading, firstly, to an examination of the general influence of syphilis on the muscles; secondly, to the special study of syphilitic tumours of the muscles and their appendages.

It is well known, M. Bouisson remarks, that constitutional syphilis exercises an influence over the whole economy, which becomes special in certain tissues, with a variable degree of frequency. Affections of the muscular system and its dependencies are by no means so rare as those of the nervous system, and yet they have escaped the attention of a great number of pathologists. Tumours and muscular pains of syphilitic origin have, however, been recognized, and the latter have been designated as *syphilitic rheumatism.* M. Boyer observed cases of syphilitic muscular contraction, and Ricord called attention to the facts, that they occur only in the constitutional affection, and in the tertiary period, and that they affect, by preference, the muscles of the fore-arm. In several cases they have been cured in a few weeks with large doses of iodide of potassium. In one case the affection occurred simultaneously with secondary symptoms, when the iodide of potassium was associated successfully with proto-iodide of mercury and hemlock. M. Bouisson having

* Walshe on Cancer, 1846, p. 95; idem, 155; idem, 456. † Med. Times, 1845.

‡ Gazette Médicale, July 11, 1846.

been led by these facts to make further researches, records a case of *divergent strabismus of the right eye*, in a woman about 35 years of age, who had been the subject of syphilis, and still retained its traces. On the supposition that the contraction of the external rectus muscle had a syphilitic origin, and as a remedy for the syphilis, a mercurial treatment was adopted, under which the strabismus and the other symptoms disappeared.

According to Bouisson, the influence of syphilis on the muscular system manifests itself by—1. *Pain.* This is the most common effect. It is observed especially in inveterate syphilis, and amongst individuals who have been exposed to cold and humidity. It has been described under the name of syphilitic rheumatism, and has its seat in the course of the muscles, tendons, aponeuroses, and fasciæ. These pains have many characters analogous to periostitis, but they are not so deep-seated, they are rendered more acute by muscular contraction, and they differ from ordinary rheumatic pains in being related to syphilitic symptoms, and giving way to specific treatment. 2. *Contraction of the Muscles.* This is sometimes the result of syphilitic rheumatism, of which it is only a more advanced stage; at other times it comes on very slowly. According to Boyer and Ricord, it occurs especially in the upper extremities and in the flexors of the fore-arm, but all the muscles may participate in it; and it is extremely liable to occur in the sphincters, as shown by the frequency of permanent contraction of the sphincter ani, in the subjects of syphilitic affections around this opening. Active and painful contraction of the constrictor of the vagina, with ulcerations in the neighbourhood of the vulva, are also frequently observed. M. Bouisson remarks, that if in some cases these permanent spasms are induced by the presence of the ulceration, independent of all specific influence, the laws of analogy are not infringed by admitting confirmed syphilis as another cause. 3. *Tumours developed in the muscular system and its dependencies.* This affection demands especial attention.

Tumours in the substance of the muscles are but little understood. Those which occur in the muscles of animal life have scarcely been investigated. Warren, in his work on Tumours, is the first to describe scirrhous, melanotic and fungoid free and encysted tumours of the muscles, but he does not mention syphilis; and he especially declares that the affections he describes are extremely rare.

Tumours which occur in the muscles, under the influence of syphilis, may be classed with those which come under the designation of *tumeurs gommeuses*. They belong to the tertiary period, and succeed to a chronic inflammation; the products of which are modified by the specific nature of the pathological cause.

The analogy which exists between the periosteum, the ordinary seat of gummata, and the fibrous tissue of the tendons and aponeuroses, explains why such tumours occur more frequently in this than in the fleshy tissue of muscles. It is a recognized fact that the tendons, in spite of their slight vascularity, participate in the effects of inveterate syphilis, and are particularly liable to become the seat of partial thickenings, or small *nodes*, sometimes hard, sometimes soft and fluctuating. The aponeuroses are somewhat less susceptible of this pathological change.

Syphilitic tumours of tendons are sometimes solid, and appear to consist of a circumscribed hypertrophy of the fibrous tissue, with an effusion of a serous and plastic matter in their interstices. They are attended with more or less pain, increased by the exercise of the muscle which corresponds to the affected tendon; and when this is examined post-mortem, it is found to have kept its natural colour, or presents at most the appearance of slight congestion, but is increased in size by an hypertrophy of its fibres, or by the addition of a

semi-solid albuminous matter. M. Bouisson has observed the tendon of the tibialis anticus in this state, in a patient who at the same time laboured under periostitis of the corresponding tibia. If the affection persists for a long time, and does not terminate in suppuration, ossification occurs, and sometimes extends through the whole length of the tendon; which M. Bouisson has observed in the psoas minor. At other times it is limited to the part affected, forming a kind of accidental sesamoid bone.

Syphilitic tumours of tendons are sometimes seated on the surface, and sometimes in the centre; the former being their most common seat, where there is a more obvious swelling, or an abrupt rising in the course of the tendon; but when they terminate in suppuration the continuity of the fibrous cord is preserved. The affection may be seated exclusively in the central part; in which case the morbid production separates the proper fibres of the tendon, giving to the tumour an ovoid or spindle shape. There is a tumour of this kind, of one of the tendons of the digital flexors, in the Museum of Pathological Anatomy of Strasburg, in which there is sensible fluctuation through the fibrous envelope, and the tumour presents the form and size of an almond.

M. Lisfranc has described what he considers a very rare affection, under the designation of *white nodosities of the tendons.* There is reason to believe that the principal case described was a *syphilitic node of a tendon;* a large tumour having been developed in the substance of the tendo-achillis, which resisted all other treatment except iodide of potassium.

M. Bouisson gives a case of *syphilitic tumour of the inferior extremity of each tendo-achillis.**

The same kind of tumours which occur in tendons are met with also in the fleshy parts of muscles. Their primitive seat is probably in the cellular membrane interposed between the fibres; but whether so or not, as the disease progresses to suppuration, or induration, all the anatomical elements become involved. The muscular fibres appear to be replaced by a new formation, or are softened and destroyed; or, more especially, they are transformed into an indurated, sub-cartilaginous, or even an osseous tissue.

In the first stage, the muscle is the seat of a local and circumscribed swelling, of more consistence than œdema. A section presents fasciculi of discoloured fibres surrounded by a grayish plastic effusion, apparently indicating the progress of a slow inflammatory action. In the second stage, if the inflammation continue in its chronic form, the effused material becomes softened and transformed into a viscid liquid, resembling a solution of gum. If an intercurrent acute inflammation occurs, or if from the beginning there has been constant pain and increased heat in the tumour, pus forms in the centre of the muscle, and the fibres become softened and destroyed. M. Bouisson believes that many intrapelvic abscesses and destructive inflammations of the psoas and internal iliac muscles are syphilitic; a remarkable instance of which is given in illustration. In the third stage, the tumours which have not suppurated pass through successive forms of organization, from simple induration to the sub-cartilaginous, cartilaginous, and the osseous state. Ossification of the muscles and tendons have frequently been observed in syphilitic subjects, with exostoses in various parts of the body. In one instance of a skeleton of an Arab, besides numerous exostoses, there exists ossification of a great many muscles at their points of insertion, the osseous productions being styliform, laminated, or of any other configuration, according to the disposition of the muscles which have participated in the transformation.

It is probable that no muscle is exempt from syphilitic tumours, as no

* Gaz. Méd. de Paris, July 18, 1846.

bone is exempt from exostoses. M. Bouisson has observed them in the gluteus maximus, trapezius, sterno-mastoideus, vastus externus, pectoralis major, and many other muscles; but certain organs of a structure essentially muscular, as the tongue and the lips, appear especially to be their seat. It is remarkable, also, that the velum palati, a musculo-membraneous organ, is one of the points of elcction for syphilis. The larynx itself, so frequently attacked in its mucous and cartilaginous elements, may be so also in the muscles which move its various parts; and the question arises whether certain swellings of the neck of the uterus, succeeding to the venereal disease, may not be comprehended in this description of tumour.

The tongue is, perhaps, the most frequent seat of the affection, the disease itself having been observed by every practitioner having to treat inveterate syphilis; although its anatomical seat, which in truth is in the muscle, has not been taken into consideration. Syphilitic tumours of the tongue occupy the base, the edges, or the point of the organ. M. Bouisson has observed them most frequently at the base. Sometimes the whole organ is involved. They may be easily distinguished from superficial excrescences, which have their seat in the mucous or sub-mucous tissue. The latter do not interrupt the motions of the organ, unless very large; they are irregularly divided at their summits, and their point of election is that part of the tongue which corresponds to the isthmus of the fauces. Tumours of the muscles are with more difficulty distinguished from the swelling of ordinary or mercurial glossitis. In the latter cases the signs of local and general inflammation may suffice, and the existence of the mercurial fetor, salivation, and grayish ulcerations, will clear up any remaining doubt. Cancer of the tongue is distinguished from syphilitic tumours by the lancinating pains, by the primitive form being most frequently a hard, circumscribed, warty tumour, and by the absence of the concomitant signs of syphilis. The author gives a case of syphilitic tumour of the middle region of the tongue ameliorated by muriate of gold, and another case of tumour at the base and right edge, cured by the same remedy.*

In *the lips*, in which a cutaneo-mucous tissue, a rich vascular network, mucous glands, and cellular tissue, are associated with muscular tissue, syphilitic tumours cannot be exclusively referred to the last-mentioned anatomical element. But the muscular element predominates, and tumours of this kind most frequently commence in the centre of the lip, the whole thickness being ultimately involved, establishing an analogy with the preceding cases, and an affection of the fibrous and muscular tissue of which the organ is composed. A syphilitic tumour of the lip is not a swelling of the tissue of the lips subjacent to a primary chancre, but a swelling independent of any local cause, and occurring as a symptom of constitutional syphilis. It is met with frequently in hospital practice, and requires to be distinguished from labial cancer. The history of the affection, the concomitant symptoms, the nature of the pains, and the degree of consistency of the tumour, will assist the diagnosis. In syphilis, the seat of the disease is rather in the centre than towards the free edges; while in cancer the abnormal tissue most frequently developes itself on the labial borders, where it shows itself all at once in the form of a warty prominence with lancinating pain. If ulceration occur, the proper characters of each disease manifest themselves.

The *velum of the palate*, so frequently the seat of secondary syphilitic ulceration, may be the seat of syphilitic tumours in the central fibro-muscular tissue. In many patients affected with inveterate syphilis, indurations in the velum have been observed, sometimes circumscribed, sometimes diffuse, with-

* Gazette Méd. July 25, 1846.

out ulceration of the enveloping membrane. In one remarkable case, a tumour of this kind accompanied other tertiary symptoms—exostoses of the legs and caries of the bones of the nose—the velum of the palate being the seat of a hard tumour, the size of an almond, without ulceration of the mucous membrane.

The muscles of the larynx.—M. Bouisson met with a tumour involving the whole of the thyro-arytenoideus muscle, in a subject presenting traces of laryngeal phthisis, and although syphilis expresses itself in this part most frequently by caries or necrosis of the cartilages, and ulcerations of the mucous membrane, yet the loss of muscular power indicates that the muscles participate in the general alteration of the elements of the larynx.

M. Bouisson concludes his memoir with a résumé of which the following is an abstract:

Causes.—The osseous and fibrous tissues are principally affected in the tertiary period of syphilis. The periosteum, the fibrous coverings of divers organs, the tendons, the aponeuroses, are the seats of the particular affections which syphilis provokes by its unaided influence, and without any local or appreciable cause intervening to explain their formation. Syphilitic tumours of the muscles are in the same category; they develope themselves in the substance of the fleshy fasciculi without any particular exciting cause.

Symptoms.—Such tumours are recognized by their anatomical seat and the interruption of the muscular functions. All contraction is followed by pain, or this is exasperated if it existed before. In certain cases the affected muscle retracts, as happened in the tumour described of the psoas and iliac muscles; but this retraction is not a necessary symptom, and it may be produced by the action of syphilis without the existence of a tumour. The consistence of these tumours is variable, according to their duration, and the kind of termination they are likely to come to. Of a moderate hardness in their first stage, they become fluctuating if the matter which forms them be converted into pus, or into a gummy liquid; they are of a very firm consistence, if, resolution not having been effected, they pass through the divers degrees of induration, which are the consequences of frequently repeated attacks of chronic inflammation. Their form is generally globose; their size varies from that of a small nut to that of an orange, and they are unattended with any change of colour of the skin; they do not adhere to this membrane, and do not excite any sensation of heat, at least, if inflammation be not present. The lymphatic glands are sometimes enlarged in their neighbourhood; variations in the temperature and hygrometric state of the atmosphere sometimes excite their sensibility, which increases also during the night, and patients with such tumours are almost always affected with exostosis, gummata, ulcers of the isthmus of the throat, or some recent or ancient signs of syphilis.

Progress.—Their progress is always slow, and patients sometimes disregard them until they have attained a considerable size, the pains which attend their formation being mistaken for rheumatic pains. Their progress is analogous to that of syphilitic periostitis, and their prognosis is embraced in that of constitutional syphilis.

16. *Syphilitic White Swelling.*—Dr. Colles states that there is a form of white swelling totally different from all others, and absolutely necessary to be distinguished, in order to secure a successful treatment.* Patients who have secondary syphilis will often get a pain and effusion into the knee, like the white swelling of children, and it is a true and perfect symptom of the secondary form of the disease. Sir A. Cooper had a case of this kind, which got well under the use of mercury. It may be distinguished from common

* Lectures on the Theory and Practice of Surgery, 1845.

white swelling by one remarkable symptom, viz. the popliteal space is not filled up.

17. *Syphilitic Osteitis.*—A statement of the symptoms of this disease in its progress towards suppuration, from a lecture by M. Ricord, will be found in the 'Medical Times.'*

18. *Syphilitic Inflammation of the Eye in Infants.*—Dr. Jacob informs us this is sometimes, although rarely, met with, as in adults, unaccompanied by any other form of the disease; and may be accompanied by such slight increase of vascularity as to escape notice. In the early stages, redness of the sclerotica, discoloration of the iris, and irregularity of the pupil are the appearances to be observed; and at a more advanced period, alteration in the shape of the sclerotica and cornea, contraction of the pupil, and adhesion of its margin to an opaque lens. Sometimes a dilated and irregular pupil with a transparent lens is the consequence; but in either case, when the disease has escaped observation, or has been neglected or mismanaged, insensibility of the retina or amaurosis, and consequent blindness remains. At this time of life little information as to the extent of the disease can be obtained from trial of the visual power of the organ. The baby will grasp at a watch or other bright object presented to it, as long as any degree of sight remains, but slighter defects of vision can scarcely be detected. It is therefore necessary to make a very careful examination of the eye, and close inquiry as to the presence of other syphilitic disease, or of its previous existence. Dr. Jacob sees these cases oftener after the mischief has been done and the organ destroyed than during the commencement of the attack; yet even at this period the emaciation or defect of nutrition, arrested growth, and pallid dingy skin, proclaim the nature of the malady; and sometimes other forms of it may still be detected.†

19. Numerous cases of disorganization of the various tissues, believed by Lallemand to be the effects of inveterate syphilis, will be found in his lectures.‡ Affections of the orbit, retina, capsule of the lens, larynx, bones, bladder, testes, anus, ear, umbilicus, &c., including many cases of disease of very long standing, sometimes presenting a cancerous aspect, and frequently without any history of a primary affection; these cases were ultimately cured by anti-syphilitics.

§ V.—*The Prognosis in Syphilis.*

20. From a statistical paper with which we have been favoured by Mr. Acton, which was read before the Medico-Chirurgical Society on the 9th of June, it appears, as might have been expected, that the greatest mortality from syphilis takes place in children under one year of age. Mr. Acton's paper seems to show twenty-two deaths of adults from the disease in six months in the metropolis, and he mentions a fatal case, witnessed by himself, in a male, having phagedenic ulceration of the throat. But in the discussion which ensued on this paper, Mr. Lloyd affirmed that at St. Bartholomew's Hospital, where he has constantly from two to three hundred cases, and during a long professional career, he had only seen *four* cases of death, and that even these could not be fairly attributed to the syphilis alone. We learn that at the Lock Hospital there is generally about one fatal case annually, the patient being, from deep-seated ulceration and inveterate syphilitic cachexia, worn out by the disease. M. Lallemand states, from his own experience, that when syphilitic affections are neglected or badly treated they prove as fatal as they did formerly.§

* Feb. 21, 1846. † Dublin Med. Press, Aug. 12, 1846. ‡ Med. Times, 1845.
§ Lib. cit. Sept. 13, 1845.

Ricord has lately promulgated some strong opinions connected with the question of prognosis. He presented to his auditors a man with tertiary symptoms, said to have originated in a chancre contracted thirty years previously.* After the lapse of this long period the induration still existed, and was easily recognized. This case served M. Ricord's purpose well as an illustration and proof of his doctrines of the uncertainty of a complete and radical cure of constitutional syphilis, even after the most systematic treatment. Lallemand participates in this view; he believes that the poison may remain for many years latent in the system, and then show itself by its protean ravages.†

M. Ricord regards the induration of the chancre as a proof that the constitution is affected. If an indurated chancre be left to itself, the patient presents secondary symptoms in about from six weeks to six months, or in a year, as an extreme limit; most frequently exanthematous eruptions, amongst the most common of which, contrary to the opinion of M. Cazenave, is roseola. Mercurial treatment, previous to the first manifestation of the secondary symptoms, may break the chain of the affection, which, under ordinary circumstances, pursues its course infallibly. Sometimes, however well the treatment may have been managed, after a longer or shorter interval, tertiary symptoms occur. The disturbance of the manifestation of the secondary symptoms does not prevent the evolution of the general disease; it may probably only retard it.

Facts of this kind prove, according to M. Ricord, that if every time a symptom of constitutional syphilis appears, we can, with a few rare exceptions, counteract it by a specific treatment, we are still never sure of having completely destroyed the diathesis, and we may expect at one time or other to see its results. It is possible that, in some subjects, the diathesis may be destroyed by antisyphilitic therapeutics; but it is also possible that the patient may become the subject of some other affection, without having exhibited any fresh manifestations of syphilis, although the diathesis persist in a latent state. In the present state of science it is not possible, perhaps never will be, to assign a limit after which we may say to a patient, "You are radically cured." This could not be said after thirty years to the individual before M. Ricord; and last year there was a patient in the same professor's ward with tubercles of the tertiary period, having for their cause a chancre contracted thirty-nine years previously. Before the cautious British pathologist admits the validity of all this, he will require proofs which, we suspect, it will be very difficult to arrive at. The negative evidence as to an individual having been subject to the syphilitic poison for thirty years must in most instances admit of very many qualifications.

§ VI.—*The Treatment of Syphilis.*

We have an immense mass of papers before us on this, which by many of our readers will be deemed the more immediately interesting part of our subject; and we can only undertake to quote or refer to those which, in our own judgment, are at the present moment of the greatest importance.

21. On the *antiphlogistic treatment*, which has been advocated as a means of assisting the action of a mercurial course, and even of replacing its specific action, M. Ricord affirms that such a doctrine must lead to the most deplorable results. Syphilis, observes Ricord, in poisoning the economy exercises its deleterious influence by poisoning the blood, the composition of

* Gazette des Hôpitaux, July 26, 1846. † Med. Times, Oct. 11, 1845.

which it modifies, reducing the number of the corpuscles. This is now an undeniable truth. Bleeding acts precisely the same way, by diminishing the corpuscles; and one of the most important conditions for the due efficacy of a treatment is, that it should not produce the same lesions as the disease.* M. Payen remarks also,† that the syphilitic poison continuing for a long period in the system tends to impoverish the constitution, "by poisoning successively all the material parts which come under its influence." This can only be through the blood, and hence the emaciation, a state of general asthenia, and a pale and chlorotic tint. Innumerable facts have presented themselves to the writer of this report since the publication of his 'Lectures on the Blood,' in 1840, illustrative, not only of the poisoned state of the blood in syphilis, and of the ready explanation which the symptoms and the whole history of the effects of the syphilitic poison receives from the admission that the blood is poisoned, but illustrative also of the effects of other poisons and active agents on the economy through the blood. The practitioner will in future make the poisoned blood an universal element in his calculations on the treatment of syphilis, and we see one fruit of this in the rationale of the disease now adopted by almost all practitioners, and the general admission by the continental writers, that unless there be an absolute necessity, from the presence of an accidental phlegmasia, bleeding ought to be avoided in constitutional syphilis. M. Ricord's proscription of bleeding, and of other heroic antiphlogistics, must not, however, we apprehend, be taken as contravening the propriety of a cooling antiphlogistic regimen, by promoting secretion and avoiding inflammatory action, at the outbreak of secondary syphilis, as recommended by Lallemand, Miller, Parker, Lane, and other recent judicious writers.

22. *The Treatment of Syphilis with Mercury.*—M. Ricord's favorite mercurial compound is the protoiodide. Although a mild preparation some persons cannot take the smallest dose alone, without being seized with diarrhœa. When this unfavorable disposition exists opium must be added. We find a considerable discrepancy between M. Ricord's opinion on this subject and that of Dr. Colles, to which we shall presently refer. M. Ricord believes that opium is an excellent corrector, and is the substance specially indicated in all cases in which mercury acts too rapidly, or too locally on the digestive tube. The assertion that opium is an impediment to the specific action of mercury he believes to be clinically untrue. So little is this the case that their joint administration gives rise to the disappearance of syphilitic symptoms, even more rapidly than that of mercury alone, because the opium enables the mercury to be borne, and to exercise its specific influence. M. Ricord professes to trust to mercury almost exclusively for the treatment of secondary symptoms, and to have little or no faith in the iodide of potassium; but the reader will remark that the preparation he employs is an iodide.

For tertiary symptoms M. Ricord observes, that mercury may prevent their manifestation, or modify them, but when it is not the most precious and the most efficacious of medicines it is a dangerous remedy, often, indeed, a violent poison. When it does not cure it does not remain innocuous; on the contrary, it injures and debilitates the constitution, and syphilis is the more formidable, the weaker the constitution on which it acts. Thus, the abuse of mercurials may be followed by deplorable results, as it places the patient under the most favorable circumstances for the development of tertiary phenomena. The corollary from this is obvious.

A most useful and judicious practical statement is made by Professor Miller, on the use of mercury in syphilis. He lays down succinctly the indi-

* Gazette des Hôpitaux. † Revue Medicale, May 1846.

cations and contraindications in reference to the varieties and grades of the disease.*

Dr. Colles† regards *inunction* as the best means of affecting the system, but the patient should always be kept in-doors, otherwise the remedy had better be exhibited internally. Dr. Colles does not affirm all the opinions of M. Ricord, but states that we should not be in too much of a hurry to add opium to prevent mercury from running off by the bowels, as the irritation will frequently subside in two or three days, of its own accord, and not return unless the preparation be changed, or the dose too much increased. Calomel affects the mouth more quickly than other preparations, but is more apt to irritate the bowels. Corrosive sublimate causes the rapid disappearance of some of the secondary symptoms, but the cure is not radical unless it be followed by some of the other preparations. Under favorable circumstances, the mercury should manifest its effects in a week or ten days, and, although there are great differences, if no effect be produced in a fortnight, it should be stopped for a day or two, the patient purged, and a couple of warm baths given, when the mouth will frequently become sore, although the mercury has not been recommenced. If the system resist the mercury, we must not endeavour to produce the effect by increasing the quantity, but examine the health, and if fever exist, indicated by a *dry* mouth, we must suspend the remedy until this is relieved.

Dr. Colles further lays it down that if the gums swell, remaining red, and a salivation comes on, all is right; but if it cause *ulceration*, and the gums recede from the teeth, and there is no discharge of saliva, mercury is doing no good, but only mischief. If the mercury be continued without salivation, by increasing the dose, the patient will very likely be thrown suddenly into a profuse salivation which cannot be controlled. If the constitution be altered by attending to the state of the bowels, or any indication which the particular case demands, a proper salivation will often be the consequence without another particle of medicine being given.

Sometimes mercury cannot be made to affect the gums at all; it may affect the throat instead. When its effects may be expected to show themselves, the patient experiences some uneasy feeling in the throat, the soft palate will be found thickened and red, with an ash-coloured slough on one or both of the tonsils. This would spread rapidly if the mercury were rashly pushed. Little reliance can be placed on this effect in the cure of syphilis, although we must sometimes be content with it, as no other can be had, and the primary disease has been cured without any other local effect.

Dr. Colles sustains the moderate action of mercury until all induration has disappeared. If mercury be pushed too far, and a chancre put on a fungous or spreading character, the remedy must be immediately discontinued. When fever develops itself it must also be discontinued; and a further remark is made, that after the mouth has begun to be affected, if the effect is allowed to subside, much more of the mineral will be necessary to reproduce it than was at first requisite to induce salivation.

As respects syphilitic eruptions Dr. Colles remarks that, unlike other eruptions, they do not come out all at once. You see them declining in one part and appearing in another at the same time, and often have an opportunity of observing them in several stages at one time during the first month. Sometimes the eruption is extensively spread over the surface of the body, at others confined to one region, or even to a spot you might cover with your hand. It is not to be supposed that the more of the eruption that appears

* Lib. cit. p. 537. † Med. Chirurg. Review, Jan. 1846, p. 231.

the more mercury is required. Dr. Colles thinks the very reverse is the case. When the eruption comes out fully and fairly, it yields more quickly and completely than where there are only a few spots here and there. For these eruptions also, mercury may be commenced too soon, since they are frequently ushered in with fever, and the first duty is to relieve the fever; for if mercury be given during the fever, it will not do the eruption any good, but will, probably, do the patient mischief.

In that state designated by M. Ricord as "syphilitic chlorosis" Mr. Acton advocates the use of mercury combined with iron.*

Dr. Egan regards mercury as a valuable auxiliary in the cure of syphilis, and peculiarly adapted to the cases of the disease contracted from nurslings. The preparation which he finds most efficacious is the protoiodide, pushed so far as to induce a mild degree of salivation. If remedies are now laid aside, under the idea that a permanent cure has been effected, a few weeks will in general bring a recurrence of the same form of disease, or perhaps other symptoms denoting a latent taint will be superadded. We therefore find it advantageous, before the effects of the mercury have completely worn off, to follow up the treatment by the administration of iodide of potassium, which ensures the patient the best chance of recovery. Under any form of treatment, however, according to Dr. Egan, in these particular cases relapses will occasionally take place.

23. *Treatment of Syphilis by Fumigation.*—Mr. Parker† attaches much importance to vapour bathing and mercurial fumigation. In England the mercurial vapour-bath has been too much neglected. In France it has been justly appreciated; but Mr. Parker has adopted a new method, which consists in the application of mercurial vapour in a moist state to the surface of the skin, combining, in fact, the mercurial fume with the ordinary vapour-bath. Experiments have been made on this combination, and found to succeed in a variety of cases where mercurial fumigation, or the vapour-bath employed separately, had failed. These baths should be associated with an appropriate internal treatment. They succeed where internal treatment had failed, but in most instances they should be associated with it. Such is their efficacy as an auxiliary measure, that in all instances the internal treatment may be of the mildest kind. When mercury is indicated, half the quantity will suffice for the completion of the cure, which is accomplished without risk to the constitution of the patient. In fact, the baths are so efficacious that frequently internal treatment will not succeed without them. Many cases might be brought forward as evidence of this. In one, the patient had undergone a regular mercurial treatment for a primary sore, followed by an excavated ulcer of the tonsil and scaly eruption; he was profusely salivated, and kept the house for a month. Two months after he supposed himself cured, he became again covered with a similar eruption, which entirely and permanently disappeared under the use of the baths and very minute doses of the bichloride of mercury with guaiacum. This treatment did not confine him an hour. In a second case the patient had an indurated cicatrix of six months' standing, with an excavated ulcer of the tonsil of several weeks' standing. He had been taking five grains of calomel, and as much blue pill, night and morning, for three weeks, without the slightest influence upon the disease, which entirely disappeared under three weeks' treatment by the baths and nightly inunctions of a very small quantity of mercurial ointment. This patient was not confined during treatment. The permanent (?) induration of the cicatrix of a chancre has been seen, in several instances, removed by the

* Medical Times, March 28, 1846. † London Med. Gazette. Mr. Langston Parker, Surgeon to the Queen's Hospital, Birmingham.

baths, when all internal treatment had failed. This symptom is particularly spoken of as being, perhaps, one of the most troublesome and the most difficult to remove of any form of primary syphilis; it being, as is too well known, the "*forerunner of accident to come.*" In the treatment of the primary sore the mercurial vapour-bath has little efficacy, though it is recommended to be employed when the sore is about to heal, particularly if any induration be present, or if any remain after the wound has closed. In all the secondary forms of disease, more particularly those of the skin, the mercurial vapour-bath is to be looked upon as an auxiliary which diminishes the duration of ordinary treatment at least one half. It should not be employed during the fever which sometimes accompanies the onset of many of the forms of syphilides. Here, bleeding, antimonials, and aperient medicines, should precede its use. In diseases of the bones and periosteum, in chronic enlargement of the glands of the groins and of the testis, in the cachectic conditions which are the result of protracted diseases and repeated mercurial treatment which have broken down the constitution, these baths, combined with remedies calculated to improve the general health, in most instances work the most remarkable cures.

The apparatus for producing the mercurial fumes consists merely of a spirit lamp and a china plate, upon which the cinnabar or bisulphuret of mercury is laid. The quantity of cinnabar necessary for each fumigation is from twenty grains to a drachm.

According to Dr. Cumming,* the native practice in India for obstinate secondary syphilis is by mercurial fumigation, repeated every morning for fourteen times, by which time a cure is generally obtained; a profuse perspiration is produced, but rarely ptyalism.

24. *On the Treatment of Syphilis with Iodide of Potassium.*—M. Payen† lays it down as a principle, that while mercury is so much the less efficacious as the disease becomes more inveterate, or, in other words, as the poison of syphilis has penetrated deeper into the organism, the action of iodide of potassium follows an inverse progression, that is to say, its efficacy, or the rapidity of its action appear to be in proportion to the long standing of the disease; a most fortunate circumstance, which ought to lead us to regard the introduction of this remedy as one of the most important discoveries of the present age in this department of practice.

M. Payen publishes most apposite cases to prove, that under the use of the iodide of potassium, tertiary ulcerations of the soft parts are healed, pains in the bones are alleviated, old standing voluminous exostoses are frequently totally resolved, enormous periostoses are arrested in their progress and absorbed, sequestra are easily and promptly eliminated, old standing and distressing caries dry up and are cicatrized,—all this, while at the same time the debilitated organism is renewed and repaired in a sensible degree. The rapidity of these beneficial effects is also most remarkable. Sometimes in one day pains in the bones, which no anodynes would affect, are relieved, and the most inveterate symptoms are cured in a very short period.‡

M. Payen quotes cases recorded by Dr. Venot of Bordeaux, Lisfranc, and Vidal, in proof of the astonishing efficacy of the iodide in the treatment of tertiary symptoms,§ and he considers that the whole of the evidence now before the profession ought to establish it as a true specific in this stage of the disease; and M. Ricord is so persuaded of its efficacy, that he has no fear in proposing it as a specific in this particular period, and regards it also as a

* Edinburgh Monthly Review. † Lib. cit. p. 507. ‡ Lib. cit. p. 508.
§ Revue Médicale, May 1846, p. 68.

prophylactic against tertiary symptoms, when secondary symptoms have disappeared under the use of mercury.

M. Payen* also affirms, that in the treatment of secondary symptoms the iodide has a well-marked curative action. He has convinced himself of this by experiment, and he gives the details of the following cases:—1. A syphilitic pustular eruption, limited to the nose and upper lip. 2. A long-standing and extensive squamous eruption. 3. Obstinate pustular eruption. 4. Pustular eruption. 5. Squamose eruption complicated with ulceration. 6. Affection of the pharynx, with a furuncular eruption of a syphilitic nature. 7. Syphilitic roseola, with pains. 8. Psydracious pustular eruption. 9. Ophthalmia, with numerous pustules and copper-coloured eruption. 10. Syphilitic ulcers of the scrotum. 11. Orchitis, with syphilitic ulcerations on the scrotum. 12. Chronic pharyngitis of a syphilitic nature. 13. Syphilitic pharyngitis. 14. Obstinate vegetation of the glans penis. These cases were completely, and sometimes rapidly cured, or greatly ameliorated by the remedy, and some of them were cured after mercury appeared to have failed. M. Payen gives the following summary of his results:—

1st. That the iodide of potassium may be regarded as antisyphilitic as respects secondary symptoms.

2d. That it is particularly efficacious in syphilitic eruptions.

3d. That its efficacy against the syphilides has been recognized by Hanck and Kluge, who have employed it efficaciously in roseola, lichen, psoriasis, ecthyma; and by Hocken, who prefers it to mercury in inveterate pustular eruptions, rupia, &c.

4th. That generally, the longer standing the secondary symptoms, or in other terms, the more nearly they approach the category of tertiary symptoms, the more accessible are they to the powerful action of iodide of potassium.

5th. That recourse to the iodide is especially indicated when the symptoms have resisted a well-directed mercurial course.

6th. That we should give the preference from the beginning to this medicine, when the long standing of the disease leads us to predicate that it will prove of difficult access to the action of mercury, or when the debility of the organism indicates a necessity to repair the constitution, or when the constitution has shown itself refractory to the action of mercurials judiciously employed.

Hanck and Kluge have found this remedy useful in suppurating fissures; they have prescribed it without effect in the papulo-tubercular exanthems followed by loss of hair, and most frequently accompanied by ulcerations of the pharynx, and in cases where the tubercles were large, hard, red, not being covered by scales, and not passing into suppuration; they also found it inefficacious in iritis; but M. Payen observes, that it would be unjust to dispute the antisyphilitic virtues of the iodide because it is found inefficacious against some of the effects of the disease, secondary or otherwise; mercury itself fails in some cases, and M. Ricord observes that there are individuals in whom mercury produces no curative or therapeutic effect even in chancre, giving a remarkable example where the mineral had been administered for a long period in large doses without producing the slightest change. In reference to iritis we may add, that Dr. Jacob employs iodine freely and extensively in cases of syphilitic iritis in which mercury is not eligible, particularly in formidable relapsing inflammations of the eye, of "a scrofulous character, but originally syphilitic."†

The action of the iodide of potassium in primary symptoms has not hitherto received the attention which it deserves.‡ M. Ricord is silent upon the sub-

* Rev. Méd. June 1846, p. 215. † Dublin Hosp. Rep. ‡ Rev. Méd. July 1846.

ject, and probably attaches no importance to it, or probably recognizes no remedial agency in the salt at this period. In Wallace's work also, the administration of the iodide is only viewed in relation to the constitutional symptoms. A memoir by M. Payen, in 1842, published in the Bordeaux Journal in 1844, contained some cases tending to prove that even for primary symptoms the treatment with the iodide may sometimes be resorted to with advantage. In the first case, a chancre on the prepuce, with a discharge from the urethra, had been treated with mercury for more than two months without benefit, after which, 15-grain doses of the iodide cured the disease in a little less than six weeks. In the second case, the iodide cured an indurated chancre in a month, after a mercurial course of six weeks. In the third case, the iodide alone cured an indurated chancre in twenty days.

A year afterwards M. Desruelles published four cases, in which M. Bazin tried the effect of the iodide in primary symptoms with fortunate results. 1. Four chancres on the labiæ were very rapidly cured. 2. Ulcerated mucous tubercles on the labiæ, a swelled inguinal gland, and gonorrhœa were cured in nineteen days. 3. Mucous tubercles of the vulva and anus were cured in forty days. 4. Chancres of the vulva and anus, swelled inguinal glands, gonorrhœa—cured. M. Desruelles could have appended many more cases. Hanck and Kluge, however, have published the result of 400 cases of syphilis, from which it appears that the iodide proves most frequently inefficacious in the primary disease. Hocken also came to the conclusion that the iodide is nearly inert when prescribed for primary symptoms, except in the phagedenic form, which is associated with general debility and derangement of the health.

With these contrarieties of opinion before him M. Payen resolved to determine the question for himself. He gives a case of primary indurated chancre left without treatment for six weeks, for which the iodide was prescribed; it produced a favorable effect very rapidly, the ulcer became less inflamed, progressively contracted, and gradually cicatrized, by the fifteenth day of the treatment; but as some induration remained, the iodide was continued eleven days afterwards, when the latter was quite removed; frictions were also employed for a few days with hydriodate of potassa, the cure being perfect after the use of the iodide of potassium for 28 days. M. Payen believes that a longer time would have been taken to obtain a similar result with mercury. In a case of gangrenous chancre the result was equally decided, the symptoms were rapidly ameliorated, the sphacelated part thrown off, and cicatrization and a cure obtained; but it may be objected that the gangrene had altered the specific nature of the ulcer. In a case of chancre and bubo, the former having nearly healed, and the latter being but little inflamed, though tending to soften, the bubo disappeared, the chancre healed, and the cure was complete in one month. In another case of chancres of the glans, it was impossible not to recognize the powerful effects of the iodide of potassium, which cured them in 39 days. In a case of indurated chancre dating 25 days, with a suppurating bubo, the cure was slow, on account of the bubo, and there were some interruptions from a slight gastric derangement; still it was effected in from 44 to 48 days. In another chancre dating ten days, with phymosis, cicatrization was obtained in eight days, but the treatment was continued for two months until all induration had ceased. In a case of eight primary chancres greatly irritated, but quite characteristic, a bubo occurred, and was resolved during the treatment with the iodide, and a cure was effected in ten weeks. It is frequently necessary to continue a course of mercury as long, and even longer.

We have an immense mass of testimony before us in favour of the use of iodide of potassium in the treatment of syphilis. M. Payen quotes Wallace,

Ricord, Lafargue, Seguin, Chomel, Vidal, Lisfranc, Dr. Langevin of Havre, Gueretin, Drs. Spirini, Riberi, and Lasea, of Italy, Berghem of Anvers, and Dr. Schützemberger of Strasbourg. Mr. Carmichael, Dr. Jacob, Professor Miller, Mr. Lane, Mr. Acton, and other practitioners of this country might be added. Before we dismiss this part of the subject we may quote one or two of the remaining papers.

M. Pelizzari has administered iodide of potassium in nearly thirty cases; with Ricord, Gauthier, and others, he finds that it succeeds best in ulcerous and tuberculous secondary and in tertiary syphilis, and most quickly where the patient has been previously treated by mercury; he also believes it to be most efficacious in debilitated subjects of a lymphatic temperament. Having given it in very large doses for two months to a robust, well-fed individual, of a sanguine temperament, suffering from pain in the tibia and in the articulations, it produced but very slight benefit, and the affection got rapidly well under mercurial frictions and baths. M. Pelizzari gives smaller doses than M. Ricord, the average quantity in twenty-four hours by the one being thirty grains, while that by the other is forty-five grains; he has frequently observed the slight cerebral excitement which has been called *iodic inebriety*, and the pulse also becomes more vibrating and quick. He has never observed ptyalism, but sometimes a peculiar metallic flavour has been mentioned. Three patients had a slight pruritus, and one only a very slight papular eruption. The suspension of the remedy for a few days was the only thing necessary to correct these inconveniences.*

M. Mistler subjected 38 patients affected with chancre to the action of iodide of potassium in doses of about 15 grains daily, continued not only until the local symptoms were completely cured, but afterwards so long as secondary symptoms were to be feared.† The result was, that 32 of the 38 patients escaped secondary symptoms for eight years, while in the remaining six consecutive symptoms declared themselves. If mercury then is not to be regarded as a prophylactic against constitutional syphilis, neither is the iodide of potassium; for M. Mistler observes, "we see by these experiments, that one sixth of the patients affected with local symptoms had secondary symptoms, and it is questionable whether the proportion would have been greater had no constitutional treatment been adopted.

Finally, Mr. Acton affirms that he meets with cases where neither mercury nor iodide of potassium does good in the secondary forms. He lays down the following propositions on the use of iodide of potassium.‡

Prop. 1. Secondary symptoms occurring after a primary affection, which have *not* been treated with mercury, are usually *not* in the least degree ameliorated by iodide of potassium.

Prop. 2. Secondary symptoms occurring after a primary affection, which have *not* been treated with mercury, will as generally require for their cure the preparations of mercury, given in appropriate doses.

Prop. 3. Secondary symptoms, followed by sores, treated with mercury, frequently persist, in spite of mercurial preparations, in some cases become aggravated, or only yield to very large and dangerous doses of the mineral.

Prop. 4. These symptoms will very rapidly get well under iodide of potassium when administered in proper quantities.

25. *The Treatment of Syphilis and other external Diseases, by means of Galvanism.*—M. Krusell§ has obtained permission to establish an hospital at St. Petersburg to carry out this object. The method adopted is to begin by conducting a galvanic current from the wound for a certain time, and very

* Gazetta Toscana delle Scienze Medico-Fisiche. † Gazette Méd. Oct. 12, 1845.
‡ Lancet, Jan. 31, 1846. § London Med. Gaz. June 1846, p. 1015.

striking results are said to have been afforded. All kinds of syphilitic sores have been submitted to the treatment, the number of patients recorded being 43. In a few of the cases other means were added, but in far the greater number nothing was resorted to but galvanism. The sores healed in nearly all the cases in a very short time.

26. *Treatment of Chancre.*—Ricord, Parker, Lane, and Miller hold that the abortive treatment is to be adopted in all cases of chancre, to destroy it at its commencement, to prevent the absorption of the virus and the development of constitutional syphilis; and it ought not to be the less attempted although the latter is not always prevented by it. It may be effected by excision or by cauterization. The former is not certain, the wound sometimes resuming the virulent character, but it ought to be employed when the chancre is seated on the edge of the prepuce, and where the matter has penetrated into a follicle, and is as it were imprisoned. Cauterization with nitrate of silver is sufficient at the very commencement. The Vienna paste, from penetrating more deeply into the tissues, is more efficacious, and is preferable when the ulceration is further advanced; it is preferable to caustic potassa from being more easily managed, and more easily limited in its action. In experiments it has invariably destroyed chancres when applied during the first six days after inoculation, a simple wound remaining at the separation of the eschar, which rapidly cicatrized. The mode of carrying out the abortive treatment is well described by Professor Miller,* who considers the nitrate of silver as too feeble an escharotic in the Hunterian chancre, and recommends the fused potassa.†

27. *Treatment of Venereal Excrescences.*—A concentrated solution of opium, as recommended by M. Desruelles some years ago, has lately been found most efficacious by M. Venot, of the Venereal Hospital at Bordeaux, particularly in cellulo-vascular excrescences with a broad basis. M. Venot's formula is aq. destill. lb. j; extr. opii ℥ ij; ext. cicutæ ℥ j.‡

28. *Treatment of Old Syphilitic Ulcers.*—In the 'Gazette des Hôpitaux,'§ the use of the acid nitrate of mercury applied locally to old syphilitic ulcers is most highly extolled. M. Velpeau, after touching the surface of all the ulcers twice or thrice, or until they have assumed an improved aspect, binds them with diachylon plaster, from below upwards, and cicatrization soon takes place. A man came to Paris with as many as 30 ulcers on different parts of his body, which had resisted ordinary treatment for 18 months. The remedy was applied to one third of the ulcers at a time, and the patient was cured in a month; it appears to act as a specific in these diseases, and ought to be employed in all doubtful cases. Professor Miller advocates the use of the same remedy.‖

29. *Treatment of the Syphilitic Testis.*—This being a secondary affection in the order of the succession of symptoms, on the limits between those which are secondary and those which are tertiary, it is necessary to adopt the treatment appropriate to these two periods of the affection. M. Ricord combines the mercurial treatment with the administration of iodide of potassium. M. Helot ¶ regards the simultaneous employment of these two remedies as more efficacious than either employed alone. He has frequently seen the amendment very slow under the use of the iodide, becoming very decided on resorting to mercurials. The treatment must be persevered in continuously, regularly, and for some time after the cure is effected.

When an effusion has taken place, unless it obscures the testis, it is not generally necessary to puncture it, and less so to inject it. This consecutive

* Lib. cit. p. 516. † Idem, p. 521. ‡ Medical Times, Nov. 14, 1846, p. 117.
§ July 18, 1846. ‖ Idem, p. 525. ¶ Lib. cit.

hydrocele is generally absorbed spontaneously, and it is only in the case where the fluid is not absorbed, constituting an inconvenient tumour after the cure of the testis, that we should decide on resorting to the radical cure.

Topical measures should not be neglected, such as mercurial friction of the scrotum, or mercurial plasters. Compression, according to Fricke's method, favours resolution. If resorted to, the liquid contained in the tunica vaginalis when opened out should be first evacuated with a lancet, and the compressing bandages must be renewed as often as they become loose.

30. *Treatment of Syphilitic Tumours of Muscles.*—Their treatment is that of tertiary syphilis. If mercurials have not been applied, they may be resorted to with confidence, especially when the constitution is not deteriorated. But if the patient has already used mercury ineffectually, or if its use has been irregular or followed by bad results, according to M. Bouisson it is infinitely preferable to have recourse to the preparations of gold, or to the iodide of potassium. The preparations of gold, according to this writer, are most efficacious in the treatment of constitutional syphilis, especially when mercury has failed, and the iodide of potassium has been known to resolve syphilitic muscular tumours with evident promptitude; to these should be added sudorific drinks, and medicines which promote the activity of the absorbent system. Local measures are also necessary, appropriate to the particular state of the tumour, its seat, depth, and the stage at which it has arrived. The tumour may be opened if it fluctuates.*

Three cases of syphilitic contraction of the muscles, according to M. Payen a very rare affection, are quoted in his paper as having been cured by iodide of potassium.

31. *Treatment of Syphilitic Ulcerations of the Cervix Uteri.*—Dr. Bennet believes that the Hunterian chancre is excessively rare in the cervix uteri, that the great majority of ulcerations of this part, even in patients labouring under blenorrhagia, or primary, secondary, or tertiary syphilis, are simply inflammatory, but that a few are primary and a few secondary.† In the syphilitic cases Dr. Bennet recommends the usual treatment—mercury. In the primary chancre, in this situation, he recommends occasional cauterization, and appears to prefer the acid nitrate of mercury; under the use of which the ulcer rapidly heals. Should the affection leave a chronic induration of the cervix, the treatment is to be the same as for inflammatory induration. Ulcerations of a non-chancrous appearance are to be treated according to the rules laid down for the treatment of inflammatory ulceration.‡

32. As respects the treatment of syphilis generally, there is more agreement amongst practitioners on the remedies and their application, than on their mode of action. The same remedies are employed *specifically* and *rationally*. M. Gibert, of St. Louis, compares the two plans, and remarks that the most eminently rational practice is that which attacks directly the cause of the disease.§ M. Gibert, with many surgeons of the present day, would employ mercury or iodide of potassium to neutralize or kill the poison circulating in the blood, or deposited in the tissues. Mr. Lane, with many of the older and some of the more modern practitioners, would employ the same remedies to evacuate the poison from the body; the indication being fulfilled in modern practice more slowly and cautiously, with a more comprehensive view of the animal economy, and greater attention to the functions of life as a whole, and accordingly with greater success than formerly.

A Report on Gonorrhœa will appear in our next Volume.

* Gazette Méd. Aug. 1, 1846. † A Practical Treatise on Inflammation, Ulceration, and Induration of the Neck of the Uterus, 1845, p. 122. ‡ Idem, p. 207. § Gazette Méd. de Paris, Sept. 12, 1846.

III.

REPORT ON THE PROGRESS OF MIDWIFERY, AND THE DISEASES OF WOMEN AND CHILDREN.

BY THE EDITOR.

If it has at any period been the case, as it appears to be the object of certain interested individuals to prove, that the study and practice of the extensive and important section of pathology generally included within the domain of the obstetric practitioner, has been regarded as an inferior branch of our profession, we may safely affirm that at the present time the very reverse of such a feeling exists; and it were easy to adduce, among the most zealous cultivators of obstetrical science, the names of men who occupy the loftiest position in professional rank, as well as in intellectual superiority. What, indeed, it may be asked, is there of difficulty in the study, or of brilliancy and renown in the prosecution of the sister branches of pure physic or pure surgery, which may not find its counterpart in the special diseases of woman in her reproductive capacity? Where is there wider scope for diagnostic talent than is afforded by some of her diseases? Where is there greater danger, and greater necessity for energy and fertility in resources than in some of the appalling accidents to which she is subject?

The proceedings of the past six months will, we think, in themselves, afford evidence of the assiduity and talent which are brought to bear upon the cultivation of this department of our science, and as such will be considered to be replete with interest to the practitioner in midwifery.

§ I.—*Diseases of Women unconnected with Pregnancy and the Puerperal State.*

1. *Chlorosis.*—M. Benedetti* has published a paper on the effectsof the tannate of iron in chlorosis. From the trial of this remedy in a great number of cases, of which he relates six, and from having watched its effects in the practice of a colleague, M. Benedetti asserts that cases treated by the tannate of iron do not require more than from 12 to 25 days' treatment, according to the seriousness of the disease. The remedy may be given in quantities of from 5 to 30 grains daily; it acts most rapidly on persons of sanguine temperament. This medicine is prepared in the following manner:—Throw on iron filings diluted sulphuric acid, so as to obtain a very pure sulphate of iron in solution; this is to be precipitated by carbonate of soda, forming a carbonate of iron, which is to be washed several times and afterwards dried. After being pulverized, 440 grains of this carbonate of iron are to be added

* Medical Times, Oct. 1846.

by degrees to a solution of 90 grains of very pure tannic acid in a porcelain vessel. The solution is to be then constantly shaken until effervescence ceases, and afterwards it is to be exposed to a heat of 212° Fahr., until it attains the consistence of soup, when it is to be poured on evaporating dishes and dried at a temperature not exceeding 98° Fahr. The substance thus obtained, which is the tannate of iron, is of a maroon colour, insipid, insoluble, and non-crystallized; before being completely dried, however, it forms long needle-shaped crystals. It may be administered either as a syrup, or in the more convenient form of pills.

2. *Follicular Disease of the Vulva.* — Dr. Oldham* describes a form of inflammation of a painful and obstinate character which affects the mucous follicles of the vulva. It is not peculiar to married women, nor to any one period of life; nor can any general cause be ascertained. The inflammation is said to be limited to symmetrical patches of membrane at the posterior entrance of the vagina and under the urethra; examined in the commencement of the disease, a number of small highly injected points are seen, and the mucous membrane looks much inflamed. At first these points are solitary, and slightly raised on the surface, and a minute speck of ulceration is frequently seen in their centre. These correspond to the follicular crypts of the mucous membrane, and the ulcerated portion to their central pore. After a time the points lose the appearance of being isolated; they coalesce, and a band of vividly injected membrane is formed. The sphincter vaginæ is always contracted, and the mucous membrane is much puckered. In several cases Dr. Oldham has seen the disease extend to the lowest folds of the vagina; the tops of which become very red, and bleed on being touched or separated. In one case the whole tract of the mucous membrane of the vagina was similarly affected. When the disease has been of long standing, a change may be observed in the colour of the mucous membrane of the vulva and the lowest part of the vagina. It assumes a white appearance, as though some white paint had been diffused over its surface. This occurs particularly in women who have ceased to menstruate, and is not confined to the present disease, as it has been found well marked in protracted cases of prurigo of the vulva. The disease in question is described by the author as most intractable; it has all the inveteracy of some of the more chronic skin diseases, and will torment a person for years, sometimes getting better, and again returning as bad as before. The earliest symptoms of this follicular disease are leucorrhœa, with more or less irritation of the external genitals. These are particularly noticed after walking or standing. The leucorrhœal discharge then greatly increases, and from being thin and whitish becomes yellow and thicker. It never assumes the viscid gluey character which marks the affections of the cervix of the womb, but it soils the linen with a yellowish tinge, sometimes having a darker colour, from being mixed with a small quantity of blood, and occasionally smelling badly. That part of the mucous membrane which is affected becomes the seat of a most painful and almost incessant smarting, with every now and then a severe attack of pruritus. The itching, however, is not a uniform symptom, as some of the worst cases are unattended by it, and the sore and sensitive state of the vulva forbids any attempt at rubbing it. The patient sits down with pain, and adjusts her seat with care, first resting on one ischium, and then gradually sinking down on the chair. Sexual intercourse is painful from the first, but when the disease is established it is altogether abandoned, from the intense suffering it causes. Pain in passing water is a very rare symptom. Sometimes the little patch of inflamed membrane beneath the urethra may be touched by the urine as it flows, which occasions

* Med. Gaz. May 15, 1846.

much pain at the time, but generally it escapes the stream of urine. The local symptoms are often aggravated just before a menstrual period, and particularly by any mental depression, or unusual fatigue, in warm and wet weather, and by a constipated state of the bowels. To the foregoing symptoms are soon added habitual lumbar and sacral pains, heavy pains in the thighs and inguinal canals, with sometimes forcing pains when walking. The general health becomes impaired; the patient is timid, foreboding, and fretful; the digestive organs suffer; the appetite fails; the tongue is pale, flabby, and tremulous, and she is constantly nervous, hysterical, and weak. When the parts are separated in making an examination there is always much pain, the inflamed follicles, when even gently put on the stretch, sometimes bleeding a little. The orifice of the vagina is always closely contracted, and so shuts up the canal that the leucorrhœal discharge accumulates within it, and when it does escape flows profusely. The vagina and uterus are neither tender nor hot, and when once the finger passes the closed sphincter, there is but little pain experienced in exploring these parts. A quantity of discharge usually follows when the finger is withdrawn. These are the prominent features of this disorder, and there is but little difficulty in recognizing it if the parts are examined. The great practical error is to look upon the disease as an acute leucorrhœa, and the local pain, &c. as caused by the acrimony of the discharge. This disease differs from the diffused inflammation of the vulva in adults, by its attacking only a limited portion of the mucous membrane of the vulva, in not being attended with general swelling, and in its obvious follicular origin. It differs from eczema, or herpes, or the aphthous state of the vulva, not only on these points, but in the absence of vesicles; and it differs from them all in its intractability. With respect to the treatment, Dr. Oldham seems to give little hope; palliatives, such as sedatives, only can be expected to be of service, and of these the most generally successful is hydrocyanic acid. It may be used either as a lotion or as an ointment; the latter is preferable. Dr. Oldham usually employs two drachms of hydrocyanic acid with a scruple of the diacetate of lead, made into an ointment with two ounces of cocoa-nut oil. The parts should be first bathed with some simple infusion of roses, and the ointment applied two or three times in the day on lint. It rarely fails to give much relief. Amongst the preparations of opium, a lotion of lime-water with opium is perhaps the best. The poppy hip-bath has sometimes been very grateful to patients, and quieted irritation. A very useful application is to saturate some bread with a decoction of conium leaves, and to add two drachms of the liq. plumb. diacet. to a pint of the decoction. A poultice thus made ought to be kept constantly applied to the vulva, and it will frequently assuage the smarting. The general health must at the same time be attended to; the diet should be nutritious but unstimulating, and the patient should avoid walking and sexual intercourse. Change of air is of service, as are also vegetable tonics combined with saline laxatives. This plan of treatment will always afford great relief. The discharge diminishes, the pain and smarting of the vulva are appeased, and the general health improves; but it does not do more than this. The diseased follicles are still there, and any neglect of the prescribed precautions, or the coming on of any exciting cause, soon excites inflammation, with the attendant distressing symptoms. It only mitigates, but does not cure. When the health is recruited, however by these means, Dr. Oldham has in several instances prescribed a mild mercurial course. This has usually consisted of the liq. hydrarg. bichlorid. 3j. ex. dec. sarsæ. c.; and while, on the one hand, he has never seen any injurious result from this mode of administering mercury, he has reason to be satisfied with its influence in checking, and sometimes

eradicating this complaint. It has, however, no specific power in curing the disease, for in three cases where he tried it, and at first thought it efficacious, the disease reappeared. There is a resemblance between the follicular disease of the vulva and the small vascular growths at the mouth of the urethra, in their tendency to return when apparently destroyed. In the latter disease, unless the mucous membrane whence they spring is cut off with the growth, it generally sprouts forth again; and in the more obstinate cases of the follicular disease, it might perhaps be a good expedient to dissect off the affected portion of membrane. The cicatrix which it would leave in women who have not passed the child-bearing season, would be an objection to it; but in those cases which occur after the catamenial decline, it might be advantageously adopted. Several cases illustrative of these remarks are related by Dr. Oldham.

The same disease has also recently been made the subject of a memoir by M. Huguier, an abstract of which appears in the 'Archives Générales' for October of the present year. This author distinguishes three periods in the disease: eruption, suppuration, and desiccation. The very troublesome form described by Dr. Oldham, he regards as a variety of acne affecting the pudendal sebaceous follicles. He also mentions a true hypertrophy of these follicles which gives rise to warty excrescences, often erroneously regarded to be venereal, and which can only be cured by removal.

3. *Cellular Tumour pendulous from the Labia.*—A specimen of an unusual form of cellular tumour which had been attached to the left labium of a female, aged 30, was exhibited at a meeting of the Dublin Pathological Society, by Dr. O'Ferrall. The tumour, which had increased rapidly, hung suspended by a pedicle; it was supplied by an artery about the size of the ulnar. The circumference was 7 inches.*

4. *Death from Rupture of the Clitoris.*—The 'Lancet' of October 31st, 1846, contains the report, by Mr. Gutteridge, of a case in which death was induced by hemorrhage from the clitoris, which was ruptured by a kick. On inspecting the vulva a wound was seen just within the vagina on the left side, extending from the pubis along the ramus of that bone, to the extent of an inch; in depth it was about three quarters of an inch. The left crus clitoridis was crushed throughout its length, so as to exhibit its cavernous structure. From this hemorrhage had ensued, which proved fatal in about an hour after the receipt of the injury.

5. *Fistulous Communication between the Uterus and one of the Ureters.*—The following remarkable case is reported by M. Trifet† as having occurred in the wards of La Pitié. A woman, aged 40, was admitted into the hospital for a supposed vesico-vaginal fistula. It, however, appeared, upon the most careful examination, that the septum between the vagina and bladder was perfectly natural, and it was then imagined that the fistulous communication was between the uterus and the bladder. M. Bérard, under this impression, endeavoured to demonstrate the lesion by passing a sound into the bladder and another into the uterus, in the hope of being able to make them come into contact, but this was found to be impossible. The true nature of the case was first suspected from the spontaneous occurrence of severe lumbar pains in the left side, when at the same time the dribbling of urine from the os uteri entirely ceased, these pains being subsequently relieved by the re-establishment of the flow of urine. It was also ascertained that the bladder contained urine at the time that the obstruction to the flow of urine by its

* Reported in Dublin Quarterly Journal, May 1846.

† Thèses de Paris, No. 207, 1845. Archives Générales.

unnatural course took place. From this fact it was surmised that a fistulous communication existed between the left ureter and the uterus, a surmise which was rendered more feasible by further examination, and by injecting a coloured liquid into the bladder, by which means it was distinctly ascertained that no communication had taken place between that organ and the uterus. It therefore became next to certain that the abnormal connexion was between the uterus and the left ureter.

6. *Polypus Uteri.*—Dr. Montgomery* calls attention to the fact, also noticed by Dr. Henry Bennet, that small polypi are frequently accompanied by ulceration of the labia of the os uteri, which are sometimes the consequence of their removal, but more generally appear to be caused by the irritation of the morbid growth. Dr. Montgomery remarks that both the polypi and the ulceration frequently elude detection, both on account of their extreme smallness and extreme softness and mobility. They are stated to be of more consequence than their insignificant size would lead us to expect, frequently inducing and keeping up exhausting discharges and menorrhagia, which are incurable without their removal. These polypi are seldom solitary, and are often associated with fibrous tumour. Dr. Montgomery's essay, which is of considerable length, and comprehends twenty cases of various forms of uterine polypus, concludes with the following axioms :—

1. That small polypi or polypoid uterine excrescences are of frequent occurrence. 2. That they are often not discoverable by the touch alone, and so escape notice. 3. That they may even elude detection with the speculum unless the instrument is capable of separating the lips of the os. 4. That they are a common cause of ulceration and menorrhagia, the cure of which requires, as a preliminary, the removal of the polypi. 5. That while thus, on the one hand, a small polypus may escape detection, there is, on the other hand, a peculiar condition of the anterior lip of the os uteri liable to be mistaken for a polypus, and requiring a long time for its removal. 6. That the very small polypus of the os uteri is seldom solitary, and, in common with polypi of other kinds, is very often combined with other diseases of the uterus, especially with fibrous tumour. 7. That these small polypi of the os uteri, when occurring in women of advanced age, especially if they are of the vesicular kind, are often the precursors of a malignant form of disease. 8. That from polypus being very frequently accompanied by ulceration of the os and cervix uteri, and from its concomitant pain and structural alteration, the symptoms are occasionally mistaken for those of cancer; which error is most likely to be committed if an examination should happen to be made just when a polypus of rather larger size is passing through, but still engaged in, and distending the os uteri. 9. That in cases of larger sized polypi, ligature is the means most generally eligible, as being safer than excision, though not so expeditious; its application having in general the immediate effect of restraining the morbid discharges, and ultimately curing the disease. 10. That polypi and polypoid growths of small size are best removed by torsion, or in some instances their destruction may be conveniently accomplished by caustic. 11. That with large polypi, torsion is unsafe, and should not be attempted. 12. That even with one of small size and slender pedicle, excision is not free from risk of troublesome hemorrhage. 13. That in ordinary cases of benign polypus, when no other uterine disease exists, the removal of the tumour by ligature is, in a vast majority of instances, completely successful, even in apparently hopeless cases. 14. That in malignant growths such as cauliflower

* Dublin Quart. Journ. of Med. Aug. 1846.

excrescences, removal by ligature will sometimes effect a complete cure, and that where success is not so decided, much good may be done by the operation. 15. That the situation whence a polypus springs, makes a great difference in the symptoms which it induces. A polypus of the lip of the os gives rise to fewer symptoms and less discharge, than one of smaller size springing from within the os uteri. 16. That fibrous tumours formed in the substance of the uterus, may thence descend, pass through the os, and form an ordinary pedi-culated polypus in the vagina. 17. That in the unimpregnated uterus, this change will be effected gradually and slowly, but that should pregnancy occur, expulsion of the tumour may take place rapidly under the action of labour. 18. That a polypus of large size may thus make its first appearance immediately after delivery. Lastly, that the cure of long-standing polypus, with copious discharge, is liable to be followed by a condition of system, requiring precautions against determination to the head.

7. *Ovarian Dropsy.—Tapping and Injection of the Cyst with Iodine.*—The following instance of bold but successful practice is related by an American practitioner, Dr. Allison,* of Spencer Town, Indiana. Being called in consultation as to the propriety of tapping a female, labouring under ovarian dropsy in an aggravated degree, coexisting with pregnancy, he performed the operation, and drew off four gallons of fluid. At the proper time she was delivered of a full-grown child, after which the abdomen filled at intervals, so as to require a repetition of the operation as many as five times. Her strength gradually failed, progressive emaciation followed, her extremities dwindled away to the least possible size, and following this, they swelled to such a degree that bandages were necessary to keep the integuments from giving way. Such was her condition when Dr. A. tapped her the last time, August 9th, 1845. After having operated this time he concluded to introduce a tent, and thereby allow the fluid to escape as fast as it might accumulate. Accordingly he introduced a silk cord one sixth of an inch in diameter, and instructed her husband in its use. It had the desired effect; he drew off the fluid at his pleasure, without causing any material pain.

Thus matters progressed until the last of November, at which time he visited her, and found that during his absence the disease had been gradually getting worse. The discharge had become less, but almost puriform, hectic had set in, and night sweats tormented her most grievously. She was a living skeleton, and utterly unable to turn herself in bed. Dr. A. looked upon her condition as entirely hopeless, but concluded to inject a solution of iodine into the dropsical sac as a last resort. He did so, and the symptoms that followed were truly alarming, and could not be entirely controlled. They subsided, however, in a few days, and she commenced improving. The discharge rapidly decreased until it almost ceased entirely. The superficial veins became visible, and her sallow features were lighted up with the glow of returning health. But her bowels were irregular, digestion feeble, and she suffered much with flatulence. To remedy this condition she was put upon the use of a pill composed of aloes, quinine, sulph. iron, ginger, and ext. gentian. This had an excellent effect; kept her bowels regular, improved the tone of her stomach, and prevented flatulence. She continued the use of the pill for nearly four months.

A short time since her husband called to tell Dr. A. of her condition. She is enjoying better health than she has done for twelve years: weighs about one hundred and fifty pounds, and is able to do her house-work. Her colour is fresh and good.

* Philadelphia Medical Examiner.

§ II.—*Pregnancy—Labour—the Puerperal State.*

8.—*Vomiting during Pregnancy.*—Dr. Stackler* has communicated to the Medical Society of the Bas Rhin two cases of obstinate vomiting in pregnant women, in which the symptoms yielded to the black oxide of mercury, given in the dose of five centigrammes (three quarters of a grain,) daily. There was not the least trace of salivation nor any other inconvenience after the use of this medicine. Dr. Jauger referred to cases of hysterical convulsions and vomitings sympathetic with the condition of the uterus, which had been cured by the black oxide of mercury. According to this physician, the medicine is equally appropriate in irritated states of the organ, whether in pregnancy or otherwise. Should further experience confirm this property of the black oxide of mercury, its importance will be readily comprehended by those who recollect how extremely severe are the obstinate vomitings with which females are occasionally attacked during gestation. Professor Forget took the occasion of the communication of Dr. Stackler to quote the case of a woman who had been reduced to the last degree of emaciation by these nervous vomitings, and at length died during the sixth month of pregnancy.

The propriety of inducing artificial delivery as a *dernier ressort* in certain cases of obstinate vomiting, during pregnancy, has been generally acknowledged; but instances in which it becomes absolutely necessary to have resource to it are fortunately rare. The following recent case is therefore worthy of commemoration.

A lady, aged 28, the mother of three children, arrived at the sixth month of pregnancy without interruption to her health. At this period she was, without obvious reason, seized with vomiting, which resisted all medicinal treatment, and reduced her to the last degree of exhaustion. Under these circumstances, the operation of puncturing the membranes was proposed by Dr. Robert Lee, as the only means of saving her life, and was accordingly carried into effect by Mr. Edwards, of Brompton, the narrator of the case. A small quantity of liquor amnii followed the puncture, but no sign of labour pains appeared, and the sickness remained unabated for that day. On the next morning, as the condition of the patient had not improved, it was determined that uterine action should be solicited by introducing the finger, and cautiously dilating the os uteri. This was done, and the part was so far dilated as to admit the hand, but still no pains were excited, the stomach, however, became more tranquil. In the evening a few feeble pains came on, and a six-month fœtus was expelled. The placenta was large, and a fibrinous coagulum was seen to be adherent to it. From this time the vomiting entirely ceased, and the patient ultimately regained her strength.†

9. *Extra-uterine Fœtation.—Gastrotomy and Recovery.*—The following remarkable case is reported by Dr. Whinery.‡ A female after her second confinement, observed a tumour in her right side, which exhibited movements, and was accompanied by intermitting pains, resembling the initiatory pains of labour, these continued for a week and then subsided; the motions in the tumour, however, remained distinct. The patient now became pregnant again, and gave birth to her third infant. After this confinement she perceived that the above-mentioned tumour had considerably increased in size, and pains had returned and continued for a period of nine or ten days, when she was seen by Dr. Whinery.

* Gazette Méd. de Cherbourg; Encyclograph des Sciences Méd., Mars 1846.

† Lancet, Sept. 17, 1846. ‡ American Journ. of the Med. Sciences, April 1846.

It was ascertained upon inquiry that the motion in the tumour ceased about eighteen months after her previous confinement. The diagnosis was extra-uterine pregnancy, the conception probably coeval with the second pregnancy. Dr. Whinery proposed, as the only means of relieving the patient, to perform gastrotomy, and extract the fœtus. To this the patient assented, and after due preparation the operation was performed in the following manner :—

An incision was made in the linea alba of about four inches in length; after cutting through integument, the knife came into contact with a hard gritty substance, after piercing which a dark brown fluid escaped, to the amount of four or five quarts. Nothing else passed for several days, during which the strength was supported by tonics and nourishment, but in about a month after the operation a bone presented itself at the wound, which was removed, together with a confused mass of bones, hair, and putrid matter. The discharge continued to diminish from this time, and ceased altogether in five weeks. The only inconvenience which followed the operation, was an abdominal hernia, but this was easily remedied by a truss.

10. *Severe injury to the Gravid Uterus.*—The wife of a Madras sepoy, in the last stage of pregnancy, was riding on a bullock, when the animal stumbled and fell, propelling her upon its horns, which entered the abdomen about an inch above the pubis, penetrating into the cavity of the womb. The wound was about two inches in length, and allowed the hand of the fœtus to protrude. The hemorrhage was slight. Labour was induced *per vias naturales*, and a full-grown child was born, but did not survive its birth. It had been injured by the horn on the neck and shoulder. On expulsion of the contents of the womb, considerable protrusion of the intestines took place, but they were easily and speedily replaced, and the usual means were resorted to to close the external wound. The woman made a perfect recovery.*

11. *Multi-fœtation.—Triplets.*—Mr. Pretty† being called to a woman in her first labour, found the pains regular, with rather more sanguineous discharge than usual from the vagina, and great tenderness of the uterine region. The os uteri was fully dilated with a portion of placenta, and two movable bodies, covered with thin membrane, lying within it. These bodies being removed, in order to expedite delivery, proved to be dead fœtuses of about the fourth month. By a subsequent examination, the descent of a larger bag of membranes was made evident, and in a short time a full-grown child was expelled, but in a state which precluded its viability. There were two placentæ, one single, the other double; the former, which belonged to the full term child was healthy, the latter had lost its spongy condition, and become hard and lobulated, and mixed up with a quantity of fatty matter. The two small fœtuses were without odour, and resembled those of the same date which had been macerated in spirit.

In commenting upon the case, the author relies upon the opinion of Dr. Merriman, that in these cases the death of the fœtus is to be attributed to compression; there can, however, be little doubt that the more probable explanation is that mentioned by Dr. Murphy in connexion with the present case, namely, that the non-development of the fœtuses was the result of a pathological condition of the placenta, probably in the first instance of an inflammatory nature. [Vide *infra*, Diseases of the Placenta.]

12. *Labour and its Complications.—Abortion.*—M. Rodriques‡ has contradicted the assertion of M. Petitjean (Abstract, Vol. II, p. 285), that it is unsafe to exhibit quinine in pregnant women, from the risk of inducing

* Med. Gaz. Oct. 1846. † Ib. Oct. 2. ‡ Journ. de Méd. et de Chirurg., Mars 1846.

abortion. M. Rodriques relates fifteen cases of intermittent in pregnant women, which he treated with quinine, without any evil result. He also mentions a case of rheumatism cured under similar circumstances, and with equal safety, by large doses of the medicine. He believes that when abortion does occur, the event is due rather to the disease itself than to the remedy.

13. *Polypus Uteri complicating Labour.*—Among our obstetrical abstracts in the present volume (art. 110) will be found the conclusions of M. Forget upon the pathology and treatment of these tumours occurring as a complication of pregnancy and delivery; we may here conveniently give an abstract of a communication by M. Danyau,* in which very similar opinions are entertained as regards treatment. The main question discussed relates to the propriety of removing these tumours before delivery, or whether it is more advisable to wait till that event has taken place. The author agrees with Forget in preferring the latter, considering that the fears of obstruction to the passage of the fœtus maintained by Merriman and others are greatly exaggerated. He adduces the evidence of Hanck (Casper's Wochenschrift, No. 40, 1846), to show that abortion is not uncommonly induced by the attempt to remove polypi. It need not be stated that M. Danyau refers only to polypi, with pedicles of sufficient length to allow of them passing into the vagina. Fibrous tumours, or interstitial polypi, as they are sometimes called, obviously cannot enter into the question of removal prior to delivery. In regard to the method of removal, the author, contrary to the experience of Montgomery, above mentioned, prefers excision.

14. *Rupture of the Uterus.*—The case of a woman who fell violently on the abdomen at the ninth month of pregnancy is related in a Spanish periodical. From this period she complained of pain and a sense of weight in the hypogastrium, but went her full time. The membranes ruptured soon after the commencement of labour, and in a few hours a hand presented at the vulva. When the surgeon who was summoned to the assistance of the midwife in attendance first saw the patient, she was in a state of extreme collapse, and complained of severe pain and heat at the lower part of the abdomen. The presenting arm of the fœtus was livid. Upon passing the hand into the uterus, it was discovered that the entire body of the child had passed through a rent in its parietes into the abdominal cavity, the head and the presenting arm being the only parts which had not escaped. After many unsuccessful attempts to draw back the body and deliver *per vias naturales*, gastrotomy was decided upon and performed, but the patient did not survive the operation.

A second case, in which the same operation was successfully performed after rupture of the uterus, has been recently recorded by M. Kuhne.†

15. *Galvanism.*—Our readers are familiar with the application of galvanism in post-partum hemorrhage, as lately advocated by Dr. Radford, of Manchester, and have doubtless been induced to form a favorable opinion of its influence from the perusal of the further evidence of its power published in our last Report. (Vol. III, p. 272.) We have on the present occasion to notice an essay by Professor Simpson,‡ of Edinburgh, in which the efficacy of galvanism upon the contractions of the uterus is stated to have been greatly overrated, and this agent is said to have received credit for effects in reality due to the influence of the mind upon the uterus. The essay in question commences with an historical notice of the employment of galvanism in uterine hemorrhage, in which the author mentions Henden in 1803, Ramsbotham, to whom

* Recherches sur les Polypes, &c., Journ. de Chirurg., Juin 1846.

† Encycl. des Scien. Méd., Mai 1846. ‡ Month. Journ. of Med. Science, July 1846.

the idea of employing it appears to have suggested itself, although it was not carried into effect by him, and, lastly, Radford, to whom we are indebted for bringing the subject tangibly before the profession; he then proceeds to observe that in conducting this kind of experiment we ought always to take into account the many disturbing influences which perplex and vitiate our results. It is well known, he remarks, that in lingering parturition the pains suddenly abate, and as suddenly recur, without any appreciable cause sufficient to explain the variations, and, moreover, that the parturient action may be greatly modified by emotion of the mind alone. In attempting, therefore, to fix the exact influence of galvanism, these sources of fallacy must be strictly guarded against. With these preliminary remarks Dr. Simpson proceeds to detail a series of experiments performed by him for the purpose of determining the point in question.

The action of galvanism was observed under those aspects in which any agent might be supposed capable of influencing uterine action, thus: 1st. It may increase the force or intensity of the pains, without increasing their duration or frequency. 2d. It may increase their duration, without affecting their intensity or frequency. 3d. It may augment the number or frequency of the pains, without increasing either their duration or intensity. The amount of parturient action induced in his experiments was measured by the *length* or *duration* of the individual pains; and, secondly, by their *number* or *frequency* within a given period. The results are appended in a tabular form, of which we have only space to give the following general summary.

Before application of the Wires.			When applied, galvanic circle not complete.		Galvanic circle complete.		After removal of the Wires.	
Average-	Duration of Pains.	Duration of Intervals	Duration of Pains.	Duration of Intervals.	Duration of Pains.	Duration of Intervals.	Duration of Pains.	Duration of Intervals.
1	33″	188″	41″	124″	37″	147″	56″	125″
2	51	193	43	196	32	94	38	225
3	51	155	43	152	43	177	52	194
4	56	76	46	94	55	70	54	68
5	63	143	66	129	—	—	71	152
6	77	48	75	77	82	63	83	59
General average in four of the above cases, viz. 1, 3, 4, 6.								
	54″	117″	50″	112″	54″	114″	56″	125″

An analysis of the above table gives the following results:

1st. *Frequency of pains.*—In two cases (1 and 3) the interval between the pains was least, and the pains consequently, most frequent during the second period, i. e. when the wires were simply applied, and the circle was not complete. In Case 4 the pains were most frequent during the period following that in which the galvanic action was put in force, and in 6 they were most frequent during the first period, or previous to the application of galvanism.

2d. *Duration of pains.*—In Case 1 the pains were longest during the second period, the circle not being completed, and galvanic action, therefore, not established. In case 4 they were longest in the first period; and in Cases 2 and 6 they were of the greatest length subsequent to the removal of the wires. It is remarkable, observes Dr. Simpson, "*that in not one of the above four cases were the pains either most frequent in their recurrence, nor longest*

in their duration, during the time the galvanic current was passing through the uterus." Cases 2 and 5 were exceptional in different directions; in 2 the pains were shorter, as were also the intervals during the action of the galvanism. In 5 the pains actually disappeared during the twenty-three minutes that the galvanic current was in full operation. This was the more remarkable, as the pains were regular before the application of the wires, and again became so after their removal. Two other cases are given in which galvanism was employed in lingering labour, and the essay concludes with the subjoined general deductions:—

"In one instance the pains were more frequent in their recurrence, but shorter in duration during the application of galvanism. In five other cases the galvanism neither increased the average frequency of the pains nor their average duration. In one instance the pain entirely ceased while galvanism was in action, and returned as soon as it was suspended."

Dr. Simpson does not wish it to be inferred from these observations that galvanism does not possess the power of exciting uterine action in *any* way that it may be applied, but he considers himself justified in thinking "that as employed at the present time, and in the present mode, [in what other way is it to be used?—Ed.] it is not a means which can in any degree be relied upon for the purpose in question, and is, so far, practically useless as a stimulant to parturient action."

16. *Uterine Hemorrhage.*—M. Senn* has made known a plan of proceeding during the expulsion of the child, by which he states that he can ensure the detachment and expulsion of the placenta without risk of hemorrhage within a few minutes of the birth of the child. His plan consists in seizing the cord after the infant is expelled, and grasping it a few inches from the umbilicus, to force the blood backwards as far as he can towards the placenta, so as to engorge that organ to the utmost. By this means he maintains that the uterus is excited to vigorous action; the only cases in which he omits the above proceeding are those in which the infant is feeble and anæmic.

17. *Phlegmasia Dolens.*—M. Dronsart† has recently published in a separate form a memoir on phlegmasia dolens, presented by him to the Academy of Medicine, Paris, a year or two back. This memoir contains nothing new to the British practitioner, to whom the true pathology of the disease has long been familiar, but it offers an excellent digest of its history, and of the facts upon which its true nature has been ascertained. The author shows that the opinions of the pathology of the disease may be reduced to five, with the enumeration of which it is scarcely necessary to trouble our readers; and he exhibits the manner in which each theory for a time appeared to hold its ground. As may be expected, he rejects all but the last, namely, that which refers the disease to inflammation of the large veins of the limb. In a subsequent part of his memoir he lays down the rules for the diagnosis of the disease, distinguishing it from angioleucitis, or inflammation of the lymphatics, from anasarca, and from elephantiasis; the latter we should have thought scarcely necessary.

The treatment advised is for the most part that in general use, consisting in local depletion, fomentations, and gentle aperients. He very properly objects to bandaging and other unnecessary manipulation of the limb.

18. *Puerperal Fever, Epidemic of.*—There is a good description of an epidemic of puerperal fever which has recently occurred in the Maternité of Gratz, by Dr. Schoeller.‡ The disease appears to have assumed two different types, being in some purely inflammatory, in others distinctly typhoid.

* Bulletin des Académies, Jan. 1846. † Monographie de la Phlegmasia Alba, &c. 8vo. Paris, 1846. ‡ Medicinische Jahrb. de K. K. Oesterr. Staats, Oct. 1845.

The greater part of the author's communication is taken up with an account of the post-mortem appearances, which are carefully and minutely detailed; as regards symptomatology, and treatment more especially, there is no fresh information to be obtained. The post-mortem changes were as follows: In the cranium the organs were generally healthy. In the thorax there were evidences of pleurisy and pneumonia, in albuminous exudations, together with serum, and engorgement or hepatization. The blood was very fluid, and exhaled a peculiar odour, compared by the author to that of the bat. In other respects the blood resembled that of persons poisoned by prussic acid, and stained deeply the depending parts of the larger vessels. The abdominal cavity almost invariably contained a whey-like fluid, with flocculi of lymph; in many cases the effusion was puriform. The uterus was, in some cases, so softened as to break down under the finger; in such cases the uterine veins were seen to be filled with pus. The internal membrane of the uterus was in all cases covered by a semi-fluid putrid exudation, and in some, fragments of the placenta were observed to be adhering to it. The uterine appendages were injected and bathed in pus; the ovaries contained clots of extravasated blood, and in some cases the kidneys were granular. In two cases the author found a species of exanthematic eruption in the vagina, which had been previously noticed by Eisenmann.

19. *Puerperal Fever, Identity of with Erysipelas—its contagious Nature.*—There is no subject within the province of obstetric pathology more painfully interesting than is the question of the true nature of puerperal fever, some forms of which present the most hopeless cases which the physician is called upon to witness. The opinion that, in its epidemic form this fever is identical with, or at least closely resembles erysipelas, is gaining ground; and we think the evidence which has lately been collected upon the point, and which we shall now proceed to lay before our readers, will go far to convince the most sceptical.

In a most candid and important communication, lately presented to the notice of the Medico-Chirurgical Society of Edinburgh, Dr. Peddie* adduces a series of cases illustrative of the contagiousness of puerperal fever, and of its intimate association with erysipelatous and phlebitic inflammation. The cases are as follows:

Case 1st, Mrs. S., aged 32, previously weak in health and depressed in spirits, was delivered on the 2d September, after an easy labour. She was seized on the third day with fever, which soon assumed the features of the malignant adynamic type, and died on the eighth day from her accouchement.

Case 2d.—Mrs. W., aged 23, attended by Dr. Peddie for a friend. She was also in delicate health, and had a strong presentiment of death; she was delivered after an easy labour, on the 7th of September, and immediately after was placed under the care of another practitioner. She had begun to complain on the third day, and died on the 13th—the sixth day from her accouchement—with all the symptoms of the adynamic puerperal fever, complicated with much intestinal irritation. Dr. Peddie was not aware of this person's illness and death, until after he had delivered his next patient.

Case 3d.—Mrs. K., aged 25, also delicate, and in extremely low spirits, was delivered on the 14th September of her second child; labour natural and easy; seized with fever on the 16th; her case afterwards presented nearly the same features as those in Case 1, and she died on the 21st—seven days from the period of her confinement.

On the appearance of fever in Mrs. K.'s case, and finding that no epidemic

* North. Journ. of Medicine, Jan. 1846.

prevailed, Dr. Peddie perceived that a contagious puerperal fever had broken out in his practice, and immediately consulted with several medical friends as to whether he should now for a time give up all obstetric engagements. The advice received was to comply as usual with the next call for attendance, but to adopt every possible precaution against the transmission of the virus farther. Accordingly, by assiduous attention to sprinkling and washing with the solution of the chloride of lime, proper arrangement of visits, and change of garments—not forgetting even the gloves and handkerchief—he secured the safe delivery and recovery of three patients; the first on the 19th, the next on the 22d, and the last on the 25th of September. That none of these patients showed the smallest tendency to fever was the more satisfactory and encouraging, as the first and last were rather delicate, and the other was sister to Mrs. S. (Case 1), who died only twelve days previously, and with whom she was much in contact. This too, was the more singular, as she was in a state of so much alarm in the prospect of her own approaching hour of trial, as to be seized with labour rather prematurely. Dr. Peddie's anxious fears regarding the farther propagation of the disease were thus lulled into security; and he felt disposed to view the occurrence of three consecutive cases of fever as one of those remarkable coincidences with which medical men occasionally meet; or if they really were instances of contagious fever, that the virulence of the morbific influence was exhausted, or could be overcome by the adoption of precautions. These sanguine hopes, however, were soon distressingly disappointed by the occurrence of the two following cases in rapid succession.

Case 4th.—Mrs. T., aged 29, was delivered of her second child at 12 o'clock noon, on the 26th September. Resided a few doors from Mrs. K. (Case 3) whom she attended on the evening of her confinement, and visited frequently until the fever showed itself, and again on the 18th, although strictly prohibited, when she assisted in effecting a change of clothes and bedding. She was afterwards likewise exposed to contagion from the constant intercourse of friends between the two dwellings. Her labour was very easy, and she had every appearance of doing well, until next day at 12 o'clock at noon, when she was seized with fever, and death occurred in the evening of the 30th —the third day from the period of accouchement.

Case 5th.—Mrs. T., aged 23, was delivered of her first child at 12 o'clock at noon, on the 27th September, after a natural but rather tedious labour. It was completed some hours before Dr. Peddie had an opportunity of knowing that his last patient (Case 4) had been seized with the fever; and on making his evening visit he found that she too was already affected with the dreadful malady. Death took place at 3 a. m. on the 30th, less than three days from the time of her confinement.

Dr. Peddie considered it beyond question that Mrs. T. (Case 4) had obtained contagious fomites from his last fatal case (No. 3); and while herself affected therefrom, had communicated the virus anew to his person, and thus he conveyed it unconsciously to Mrs. T. (Case 5th), in whom it was developed almost from the moment of parturition.

Dr. Peddie now abandoned the practice of midwifery; was confined at home for several days, being much indisposed with sore throat, fatigue, and anxiety; took medicine, and the warm-bath; exposed the clothes worn at all these cases in an airy chamber, and sprinkled them from time to time with the solution of the chloride of lime; and went into the country for eight days. A fortnight, therefore elapsed before Dr. Peddie resumed his practice, and attended (Oct. 13th) his next midwifery case. Of this case, which proved fatal on the eleventh day, a minute history is given.

After some remarks on the nature of puerperal fever, and on the opinion of authors concerning it, Dr. Peddie narrates cases of erysipelas, phlebitis, and peritonitis attended by him at the same time with his puerperal cases. From one of these, a gentleman labouring under gangrenous erysipelas arising from a mismanaged bubo, he thinks it probable that the animal poison which produced such a succession of disastrous events originated. That such a supposition was not unreasonable he shows by a reference to the cases related by Mr. Storrs, of Doncaster, of which we have already given an account. (Half-Yearly Abstract, Vol. I, p. 240.) In fact, it was after dressing this case that Dr. Peddie attended Cases 1, 2, and 3.

Dr. Peddie next relates cases of disease, originating in the puerperal patients, and affecting non-puerperal individuals. Of these, one a monthly nurse, who was in attendance upon Case 3, was seized on the 25th of September with fever, and acute phlebitis of the fore-arm after bleeding, and died delirious on the 2d of October. Another nurse, who had occasionally acted in the same case, had attended the former sick nurse, and also Case 4, was seized with erysipelas of the head and face, which nearly proved fatal. In a third case, an old lady, a lodger in the house of the first nurse, had a similar but much milder attack. Several other persons who had been in communication with Mrs. K. (Case 3) were also affected with sore throat.

Dr. Peddie concludes his communication by stating the following as the principal points which he considered the facts above mentioned seemed to prove:

1st. That a specific virus of an animal nature is produced under certain circumstances, and in turn, generates a peculiar form of fever in the puerperal state.

2d. That this virus frequently originates in erysipelatous inflammation.

3d. When once generated, it may be communicated from one lying-in patient to another, with extraordinary violence, quite independently of locality or epidemic influence, either by direct intercourse, or through a third person; and this is more likely to happen in a person predisposed by weak health or depressed spirits.

4th. That the virus may also produce disease of various kinds in non-puerperal persons, more especially disease of an erysipelatous or phlebitic character.

5th. That the treatment of contagious puerperal fever, whether directed by theoretical opinions, or the indications of physical signs, proves of little avail; but that if any theory is to be entertained respecting this malady, it should be that something of a specific and morbific nature requires to be thrown out of the system, and the powers of life at the same time sustained; and that the practice which holds out the greatest prospect, small at best, of this being accomplished, is the adoption of the diaphoretic and stimulant plans, according to the stage of the disease.

6th. That the principal concern of the medical man should be (seeing that a cure is so rare) to adopt every conceivable precaution against the occurrence of a single case of the disease, or to lessen the risk of its propagation when once established in his practice. And to attain these ends, patients in childbed should either not be attended at the same period with cases of malignant or severe erysipelas, or that proper caution should be observed as to ablutions, more especially after contact with any discharge from such patients; and when a case of puerperal fever does occur, chlorinated ablutions should be used; and if a second occur, he should withdraw from obstetric practice for two or three weeks, if possible; and in the interim attempt, by removal into the country, warm baths, and other alterative and purifying means, and by

the exposure of clothing to a free atmosphere or high temperature, to rid himself of the subtile and powerful virus which adheres to him so tenaciously.*

Dr. Kneeland, an American physician, has also published a paper in which the connexion between puerperal fever and erysipelas is very clearly demonstrated. This important essay occupies twenty of the closely printed pages of the 'American Journal of the Medical Sciences,'† so that our space will not allow of an abstract of its entire substance, but we shall adduce so much of the large accumulation of evidence which the author has collected, as appears to us sufficient to establish the justice of his opinions. Dr. Kneeland remarks "that if puerperal fever and erysipelas depend upon the same cause, and are propagated in the same manner, we ought to find well-authenticated instances of the former giving rise to the latter disease, and vice versâ." In proof that such is the fact, he adduces the following instances of the contagion of erysipelas giving rise to puerperal fever:—

Mr. Hutchinson, of Nottingham, mentions the fact of two surgeons meeting half way to visit a patient labouring under extensive erysipelas of the leg. One of those gentlemen attended a woman in labour the same evening, who died of puerperal fever; the other in the two following days attended three women, all of whom he lost in the same manner.

Mr. Renton‡ states that, in a woman who died of puerperal fever, in his practice, a constant communication had been kept up with the next house in which were two children ill of erysipelas.

Dr. Ingleby, of Birmingham, gives the following series of cases. A practitioner attended a lady affected with erysipelas, and made incisions into the part. He shortly after attended a woman in labour, and on the same evening a second; both these died of puerperal fever. A third fatal case followed, and a fourth woman was attacked, but recovered. The second case was examined after death by himself and his assistant, both of whom attended midwifery cases without changing their clothes: these women died of puerperal fever.

Two surgeons visited a case of erysipelas, and went immediately after to a labour with placenta presentation, the patient died of puerperal fever. One of these surgeons attended a second confinement within a period of six or seven hours from the first, this patient was attacked with fever, and narrowly escaped with her life; the woman who nursed her became the subject of erysipelas.

Another surgeon, after opening an erysipelatous abscess, attended a woman in labour, who died of puerperal fever. A second woman was attended by the same practitioner with a similar result; four other cases followed in quick succession, one of which recovered.

In the 'American Journal of the Medical Sciences,' Oct. 1842, Dr. Jackson states, that erysipelas appeared in the surgical wards of the Pennsylvania Hospital, and at the same time puerperal fever broke out in the obstetric wards.

The above are some of the most striking examples adduced by the author in illustration of one portion of his proposition; the converse, that puerperal fever may in its turn give rise to erysipelas, is shown by the subjoined evidence:—

Mr. Siders relates the case of a Mrs. C., who died of puerperal fever after confinement with her first child. Her maid was, on the fourth day after her

* Northern Journal of Medicine, Jan. 1846. † April, 1846.
‡ Edin. Med. and Surg. Journ. 1838.

death, seized with diffuse erysipelatous inflammation. The husband at the same time had sore throat.*

Mrs. M. died of puerperal fever on the sixth day after her sixth confinement. Within a week, five cases of erysipelas occurred in the family. The sister-in-law had erysipelatous sore throat, the mother-in-law and son, had erysipelas of the head and face.

A female confined of her third child; death on the seventh day from puerperal fever. The infant died of erysipelas of the cord. The surgeon in attendance had an erysipelatous sore throat. Several other equally confirmatory cases are narrated.

Such is a small portion of the evidence which has been accumulated in proof of the close analogy of puerperal fever and erysipelas; the same fact is also incidentally supported in another communication by Dr. Kneeland, which we have now to notice, written for the purpose of establishing the contagious nature of puerperal fever.

In most contagious diseases (observes Dr. Kneeland) occurring in large cities, it is difficult to trace the communication from one individual to another, from the continual intercourse carried on; and therefore it is chiefly the physicians of such large communities who are the strongest opponents of contagion; but in puerperal fever, the circumstance of a large population has no relation to the question of contagion, owing to the peculiar state of those exposed to its attacks. When, therefore, we see this disease occurring solely, or chiefly in the practice of a single physician, in a large town, to use the expression of Dr. Blundell, "stalking behind him, wherever he goes, like his evil genius," we are surely justified in attaching some importance to such facts.

This coincidence has been mentioned by most writers on puerperal fever, the opinions of some of whom the author now mentions:—

Dr. Gordon, in his account of the epidemic which raged at Aberdeen in the years of 1789 to 1793, says, that he could foretel what woman would be attacked upon hearing by what midwife they were to be delivered; and that in almost every case his prediction was verified.

Dr. Armstrong, in his essay, on the Sunderland Epidemic, mentions several instances of confinement of the disease to one man's practice. The same fact is noticed by Drs. Ramsbotham, Lee, Gooch, Roberton, Hutchinson, and Blundell.

Dr. Holmes (in the N. E. Quart. Journal of Med. and Surg.) speaks of a series of cases in an American journal, observed by Mr. Davies, who says, "in the autumn (1822) he met with twelve cases, while his medical friends in the neighbourhood did not meet with any, or at least very few." He also mentions nine cases occurring in the practice of Dr. Pierson, of Salem, in 1829. "Up to this period," says the latter, "I am not informed that a single case had occurred in the practice of any other physician," admitting, however, that his information may have been defective. In a letter addressed to Dr. Storer, it is stated, "about three years since a gentleman in extensive midwifery business in a neighbouring state, lost in the course of a few weeks eight patients in childbed, several of them being undoubted cases of puerperal fever. No other physician of the town lost a single patient by this disease during the same period."

In the 'American Journal of the Medical Sciences,' for Oct. 1842 (p. 410), is the quarterly summary of the transactions of the College of Physicians of Philadelphia, from which we extract the following: Dr. Condie, having alluded to the prevailing puerperal fever of a peculiarly malignant character,

* Edin. Med. and Surg. Journ. 1839.

observes that, "in the practice of one gentleman, extensively engaged as an obstetrican, nearly every female he has attended in confinement, during several weeks past, within the above limits, had been attacked by the fever."

These and many other authorities (observes Dr. Kneeland) which might be adduced, proved beyond doubt the singular confinement of the disease to one man's practice. But how can this fact be explained? We should not wonder at it if occurring in the pestilential wards of an hospital; but in private practice it is certainly very strange, that the disease should follow precisely the steps of one unlucky individual, tracing him far and wide with the certainty of a bloodhound. Considering the exceeding rareness of the disease (comparatively) even in private practice, it certainly seems impossible to attribute to mere chance the numerous well-authenticated instances of the above fact; they who can swallow the immense improbability of the doctrine of chance in this matter, need hardly strain so much at the infinitely less improbability of contagion.

Clearly connected with the above fact is the question of its propagation by being carried by physicians and nurses. The whole question turns upon this; for although the succession of effects to causes does not absolutely prove the dependence of the former on the latter, if it can be shown that the instances of contagion (supposed) occurred very much more frequently (and in many instances solely) where there was communication between a physician and those affected, than where there was no such communication, are we not justified in a measure in establishing the relation of causation? The question of the contagious nature of a disease, according to Dr. Alison, (and the same reasoning may be applied to all sciences, as well as medicine), always ultimately turns on a calculation of chances. "The question always comes to this—Is the circumstance of intercourse with the sick followed by the appearance of the disease in a proportion of cases so much greater than any other circumstance common to any portion of the inhabitants of the place under observation, as to make it inconceivable that the succession of cases occurring in persons having that intercourse should have been the result of chance? If so, the inference is unavoidable that that intercourse must have acted as a cause of the disease. All observations which do not bear strictly on that point are irrelevant. and in the case of an epidemic first appearing in a town or district, a succession of two cases is sometimes sufficient to furnish evidence which, on the principle I have stated, is nearly irresistible."

Let us submit this question to the test of Dr. Alison, by quoting the opinions of some of the best authors.

Dr. Gordon says, "the disease seized such women only as were visited or delivered by a practitioner, or taken care of by a nurse who had previously attended patients affected with the disease. I had evident proofs that every person who had been with a patient in the puerperal fever became charged with an atmosphere of infection, which was communicated to every pregnant woman who happened to come within its sphere. It is a disagreeable declaration for me to mention, that I myself was the means of carrying the infection to a great number of women."

Dr. Gooch mentions the case of a physician who had several deaths in his practice from this disease in quick succession; when thinking he might have carried the contagion in his clothes, he changed them, and had no more cases.

Dr. Ingleby, (in the 'Edinb. Medical and Surgical Journal,' vol. 49, p. 415,) observes, that Dr. Campbell thinks that, "unless the practitioner has been engaged in the dissection of the bodies of those who have fallen victims, the

disease cannot be conveyed by him from females labouring under it to others recently delivered." "But the fact of the extension of the disease in this manner from the living subject has been most satisfactorily shown by Mr. Roberton. I have repeatedly observed the same myself, and have submitted a number of cases in illustration. I have also adduced the strongest ground for believing that the effluvia derived from the body of a woman who died from puerperal fever were conveyed in this manner by two practitioners, and rapidly produced the same disease in two other females."

Drs. Blundell, Abercrombie, Ramsbotham, and many others, assert that the contagion is often carried about by physicians and nurses, and many of them accuse themselves of having been the vehicles of its conveyance. When to this testimony is added the hundredfold more which is buried with the hapless victims, we have an amount of facts which it is obstinacy or willing blindness not to perceive the force of.

In the 'American Journal of Medical Sciences,' Oct. 1842, Dr. West stated some facts communicated to him by Dr. Jackson, of Philadelphia, who, when practising in Northumberland County, had seven cases of delivery in rapid succession, in all of which puerperal fever supervened; of which five proved fatal. "Women," said he, "who had expected me to attend upon them, now becoming alarmed, removed out of my reach, and others sent for a physician residing several miles distant. These women, as well as those attended by midwives, all did well; nor did we hear of any deaths in childbed within a radius of fifty miles, excepting two, and those I afterwards ascertained to have been caused by other diseases. I now began to be seriously alarmed on the score of contagion. Although I had used some personal precautions before, I now feared that they had not been sufficient."

Dr. Holmes, in the journal before alluded to, gives a series of cases occurring in the practice of a surgeon of a town at some distance from Boston. There were seven cases, which happened between the 20th of March and the 8th of May; the first five proved fatal in from four to seven days after delivery; the other two recovered. These were the only cases attended by this gentleman during the above period; "and no other cases of a similar character with those of Dr. C. occurred in the practice of any of the practitioners in the town or vicinity at the time."

In the first letter to Dr. Storer (in the same article) is found the following statement. Between the 10th and 28th of February, 1830, "I attended six women in labour, all of whom did well, except the last, as also two who were confined March 1st and 5th. Mrs. E., confined Feb. 28th, sickened, and died March 8th. The next day, the 9th, I inspected the body, and the night after attended a lady, who sickened, and died on the 16th. The 10th, I attended another, Mrs. G., who sickened, but recovered. March 16th, I went from Mrs. G.'s room to attend a Mrs. H., who sickened, and died on the 21st. The 17th, I inspected Mrs. B. On the 19th, I went directly from Mrs. H.'s room to attend another lady, who also sickened, and died on the 22d. Up to the 20th of this month I wore the same clothes. I now refused to attend any labour, and did not till April 21st, when, having thoroughly cleansed myself, I resumed my practice, and had no more puerperal fever. These cases were not confined to a narrow space. The two nearest were half a mile from each other, and half that distance from my residence. The others were from two to three miles apart, and nearly that distance from my residence. There were no other cases in their immediate vicinity which came to my knowledge. Of the six cases you perceive only one recovered."

The successive communication of the disease by individual physicians and

nurses to their patients cannot always be thus satisfactorily traced; and hence the non-contagionists maintain that the doctrine of exclusive, if not of occasional contagion, must fall to the ground. Without again showing that this negative kind of evidence is of no weight against the more positive kind which has been now brought forward, or that we do not argue for the exclusive contagion of puerperal fever, the author states, for the careful study of those who consider this argument as unanswerable, that it is quite as strong for smallpox and other contagious diseases, in which this communication cannot always be satisfactorily traced.

It becomes an interesting question for the conscientious physician how the contagion is conveyed; as by the knowledge of this he is enabled to regulate the conditions of his intercourse with his patients. Is this disease transmitted by direct inoculation, by the atmosphere carried about by the physician, from patients before death? and is it not also conveyed from the examination of the bodies of the deceased? As to the channel by which the poison enters the system, Dr. Kneeland thinks that it is probably both by the vascular and respiratory system in the majority of cases; by the uterine surface and by the lungs. Many have limited its introduction to the "wounded surface" of the uterus—but that the blood is frequently poisoned from its entrance by the lungs, is shown by the fact that puerperal fever (though the term be misapplied) may seize a woman before delivery; or that the poison may be introduced, and produce the symptoms of this disease, before the local action in the uterus has taken place. Mr. Ingleby says the attack may commence before delivery, and that he has seen a single case. Dr. Kneeland believes that he has seen another: a woman entered the Hospital de la Faculté, in the service of M. Paul Dubois, with all the symptoms of puerperal fever of the low type, which then existed in the city; she was in the sixth month of her pregnancy, and had never carried a child to the full term; she had the "facies of puerperal fever," with the abdomen moderately swelled and painful, though not exquisitely so; weak pulse, and great prostration. On examination, the os uteri was found dilated, and delivery imminent: a few hours after she was delivered of a child, dead, though not at all putrefied; the symptoms were aggravated after delivery, and death took place in a few hours. At the autopsy, the peritoneum presented evident traces of inflammation, its cavity containing the milky fluid, with membranous flocculi found in the form of the disease we shall hereafter mention as the erysipelatous; the uterine veins contained pus, and the placental insertion presented that softened, semi-putrid aspect which the Germans have called "putrescentia uteri."

It probably principally affects the blood, though its first violence may often fall upon the nervous system. It is impossible to determine this point, which is fortunately of secondary importance.

It is, doubtless, very often propagated by direct inoculation from the living subject. Dr. Rigby observes, in his 'System of Midwifery,' "the discharges from a patient under puerperal fever are in the highest degree contagious. The puerperal abscesses are also contagious, and may be communicated to healthy lying-in women by washing with the same sponge; this fact has been repeatedly proved in the Vienna Hospital." He also observes, that they are also communicable to unpregnant women, and that frequently abscesses and diffuse inflammation attacked those who washed the bed-linen soiled by the discharges. Of the acrid nature of these, the following case from the 'Dublin Journal of Medical Science,' Nov. 1844, will afford sufficient illustration. It was here necessary, for the removal of the retained placenta, to pass each arm in succession into the uterine cavity, where they

were tightly grasped by the neck. Two days after, pustules appeared on the arms, one of them being surrounded by a livid base, the part of the arm near it becoming hard and swollen. The writer hence concluded that a morbid poison was generated epidemically in the blood, contact with which communicated the taint, and converted a common furuncle into a malignant pustule; and this altered condition of the blood was sufficient to produce all the phenomena of puerperal fever in the patient, who was, however, free from the common symptoms of uterine inflammation.

Such being the malignant character of these discharges, that even those who have washed the linen soiled by them have communicated the disease to others, and that even the simple operation of passing a catheter has been the cause of propagating it, we should naturally expect to find the fluids after death of a peculiarly virulent nature. Many cases are on record of the most serious accidents from wounds received in post-mortem examinations of puerperal fever; these cannot be accounted for on the supposition of a common poison acting on an enfeebled constitution, as several cases happen in the course of every epidemic; whereas such cases are comparatively rare in diseases infinitely more common, and in which the same enfeebled condition of the system is always a predisposing cause. From the comparatively greater frequency, then (says Dr. Kneeland), of serious and even fatal symptoms in autopsies of this affection, we are compelled to recognize the existence of a most deadly and peculiar poison. This is so deadly that no wound is necessary, in order that the fatal effect may take place. Dr. Duncan, in the 'Transactions of the Medico-Chirurgical Society of Edinburgh,' mentions an instance, where Dr. Cumming was present at the dissection of one who died of puerperal fever. "He took no share in the dissection, excepting introducing a fresh thread into the needle which was employed in sewing up the body, and was not aware of any abrasion, or of having punctured himself in the act of threading." In about a week after, he experienced an uneasy sensation in the middle finger of the left hand, where was discovered "an angry pimple." Death took place on the eleventh day, with evident signs of a profound alteration of the blood.

With these startling facts before us (continues the author), we are prepared for the long list of victims to the surgeon's ignorance and negligence; a list which we fear is yet to be swelled, before the fearful truth we have endeavoured to bring forward shall be graven on the tablets of medical science.

From the mass of authority showing that the contagion of puerperal fever is liable to be conveyed by physicians to their patients, from their being present at, or taking part in the post-mortem examinations in this disease, the following instances are selected:

In 1821, Dr. Campbell, of Edinburgh, attended the autopsy of a married woman, who died of puerperal fever, after an early abortion; he removed the pelvic viscera and external parts, and carried the whole in his coat-pocket to his class-room; the next morning, having on the same clothes, he assisted, with some of his pupils, at an instrumental delivery at Bridewell; this woman was attacked with puerperal fever, and died (in the autumn). The same night, he went with another physician to deliver a woman, who also died; three others shared the same fate. Similar instances occurred in his practice in the summer of 1823; assisting at a dissection of this disease (at the time having no cases of it), from the poverty of the people, he could not properly wash his hands; without any farther attention, he went, when he returned home, to two cases of labour; both were seized with the disease, and died. Other physicians of the city, who had similar misfortunes,

convinced of the contagious nature of the disease, gave up for a time the practice of midwifery.

Dr. Rigby (in the Library of Medicine, vol. vi), says that it is highly unsafe for one to attend a case of midwifery after a post-mortem of puerperal fever; and that it is impossible to remove the smell from the hands for several hours, even by frequently repeated washing.

In the 'British and Foreign Medical Review,' Jan. 1842, the same author states, in a review of Dr. Kiwisch's work on the diseases of childbed women (who does not believe in the contagion of this disease), that a young physician, contrary to advice, examined the body of a woman who had died from puerperal fever; there was at the time no epidemic; the case seemed to be purely sporadic; three other women were soon after delivered by him, all of whom died of this affection, the symptoms of which broke out soon after delivery. "The patients of his colleague did well, *except one*, where he assisted to remove some coagula from the uterus; she was attacked in the same manner as those whom he had attended, and died also: we trust that this fact alone will for ever silence such doubts, and stamp the well-merited epithet of 'criminal,' as above quoted, upon such attempts."

Dr. Gooch remarks: "A practitioner opened the body of a woman who had died of puerperal fever, and continued to wear the same clothes. A lady whom he delivered a few days afterwards was attacked with, and died of a similar disease; two more of his lying-in patients, in rapid succession, met with the same fate."

The following is a still more striking example: Dr. Merriman, as quoted by Dr. Holmes, "related an instance occurring in his own practice, which excites a reasonable suspicion that two lives were sacrificed to a still less dangerous experiment. He was at the examination of a case of puerperal fever at two o'clock in the afternoon. *He took care not to touch the body.* At nine o'clock the same evening he attended a woman in labour; she was so nearly delivered, that he had scarcely any thing to do." She died in forty-eight hours; and the child also died *of erysipelas* two days afterwards.

In the 'London Cyclopædia of Practical Medicine' are several cases of physicians who had examined the bodies of those affected with this disease, all of whose patients, in quick succession, fell victims to a similar affection.

In the 'American Journal' above quoted, it is stated that Dr. Warrington examined the body of a woman who died of this disease, and laded out the contents of the abdominal cavity with his hands. A few days after he was called upon to deliver three women in rapid succession. One was attacked with metritis, another with partial peritonitis; both were very sick, but recovered; in the third case, the patient was seized with peritouitis, and died on the fifth day. Two other women in his practice were also attacked with it, and both died. He would not be present at the autopsies of these cases for fear of communicating more readily the disease.

From the above series of facts, carefully collected and fairly stated, the author deduces the following propositions:

1st. From the confinement of cases to the practice of single physicians and nurses in populous cities, from the fatal results attending post-mortem examinations, from its ravages in hospitals, that puerperal fever is contagious; that it may have other modes of propagation, in certain states of the atmosphere, and among strongly predisposed individuals; but that the fact of its conveyance by practitioners attests its contagiousness.

2d. That it may be propagated by direct inoculation with the fluids of the living and the dead; by the effluvia arising from the bodies of the sick, inhaled in the very chamber of death, (as in the wards of an hospital),

or carried about by the person of the physician; by clothes, bedding (fomites), which have been in contact with a deceased individual.

3d. That the order of propagation from the physician to the patient, and the regular succession of cases, show that the epidemics of puerperal fever are, in almost all cases, the effects and not the causes of the contagion.

4th. The contagion acts according to the frequency of communication between the physician or nurse (in whose practice are cases) and lying-in women, independently of insalubrity of places, wretchedness of patients, or the neighbourhood of dwellings—for although poverty and misery seem to predispose to it, communication is none the less fatal to the higher classes.

5th. A case, to all appearance sporadic, may communicate the disease; a mild case may communicate a severe disease, and vice versâ.

6th. Immunity proves nothing against contagion; it may be the effect of an acquired or temporary inaptitude—it is equally inexplicable in all contagious diseases.

7th. The rapidity of its propagation shows that it is contagious at the commencement; the fatal results of attending autopsies indicate this character after death.

8th. That a physician should not make, or be present at an autopsy of this disease; or, if he does, should take proper measures to cleanse himself and dress, for the safety of his next patient that if a case (or several cases) occur in his practice, he should consider himself, in the language of Dr. Holmes, "a private pestilence," and regulate his conduct accordingly; that persons who have washed, or have otherwise handled the clothes or bedding soiled by the discharges of this disease, should not approach, much less nurse, a woman after delivery.

9th. That when the disease is prevalent, a prompt removal from possible intercourse with a "pestilential" physician, and a strict attention to ventilation, cleanliness, quiet, proper food, &c., are the dictates of a reasonable fear.

20. As a corollary to the above communication, we shall introduce the following case, related by Dr. James Reid, in which the husband of a puerperal woman died from analogous symptoms.*

Sarah Bell was delivered of a female child, Dec. 12, at 5 p. m., it being her first confinement. The gentleman who attended her, Mr. Lee, went to her immediately after delivering another patient, who afterwards died likewise of virulent puerperal fever. On the 13th, the patient complained of slight pain in the bowels, for which a dose of castor oil was administered. On the 14th her face was pale and anxious; she complained of pain recurring at intervals in the abdomen, the slightest pressure on this part increasing it; pulse 100; bowels acted on by the aperient, and the lochial discharge free, as was also the secretion of milk. The patient was naturally of a very weak constitution. Mr. Lee ordered for her ℥xxx tinct. opii, with the same quantity of sp. ammon. arom. every four or five hours, but the pain was found on the next day (15th) to have increased; the pulse was 120, her countenance very anxious, and there was a tendency to diarrhœa. She took gr. ij of calomel and half a grain of opium every three hours; cataplasms were constantly applied to the abdomen, and six leeches to the most painful part. I first saw her on the 16th, when the symptoms continued much the same; she had lost the power over the sphincters, and her pulse was very quick; the same remedies were continued, and as much nutriment given as she was able to take, and on

* London Med. Gaz. Nov. 28, 1845.

the succeeding morning she was apparently better, not complaining of pain unless she moved, and even then it was much less. She had slept for some time; the pulse was not so quick, and the tongue moist, but still she had no power over the bladder and rectum; she became much worse towards the evening, and expired on the morning of the 18th.

The husband of this patient was observed by Mr. Lee to look very ill on the 14th, he having had no other room or bed to go to but that on which his wife lay, and he had had little or no sleep since her confinement. He was of very delicate constitution, and complained of great lassitude, headache, and pain in the back and limbs; his bowels were confined; the tongue was furred in the centre, red at the edges, and quite dry. His pulse was quick and small, and his countenance had a distressed expression. As he had to lie in the same bed with his wife, Mr. Lee obtained admission for him into the University College Hospital. Shortly afterwards sloughing of the scrotum took place, and pain and swelling of joints accompanied it. He did not survive many days, and on post-mortem examination a dark-coloured pus was found in the joints.

[The following remarks of the Editor of the 'Medico-Chirurgical Review,' in connexion with the doctrine of the communicability of puerperal fever, are so exactly in correspondence with our opinion upon the subject, and so well expressed, that we think it advisable to introduce them, in the hope that our readers will see their justice and importance.]

"So overwhelming is the testimony in favour of the contagious nature of puerperal fever, and so frightful have been the consequences which have frequently resulted from neglecting the cautions which this should have furnished, that we think that a medical man who persists in attending successive cases of midwifery, after a well-marked instance of the disease has appeared in his practice, should be made amenable to the criminal tribunals of his country. A woman has confided her life to his skill and honour, and he approaches her person the bearer of what he knows to be reputed by some of the wisest of his profession a deadly poison, the escape from which she will owe more to her own idiosyncrasy than to his humanity. Medical men are, perhaps, unconsciously the propagators of other diseases; but their instrumentality is here so well marked, and the consequences are so commonly fatal, that every man possessing a spark of conscientious feeling should at once resolve to relieve himself from the dreadful responsibility at any sacrifice. This is not one of the instances of differences in opinion, where each person is as likely to be right in the long run as the other. The practical results are fearful; and it is of the last importance to the honour of the profession, that we do not convert our ministration into a curse. It is to be regretted that an authoritative and combined opinion has not been expressed upon this subject, and a mode of proceeding laid down. Mere ablution will not suffice, nor change of linen; midwifery should be entirely abandoned for several months. The sacrifice would, doubtless, be great; but it would not be without its compensation."*

21. *Puerperal Diseases in general.*—The second series of Dr. Marshall Hall's 'Practical Observations and Suggestions in Medicine' contains a series of chapters on puerperal diseases, including puerperal peritonitis, puerperal intestinal irritation, the effects of loss of blood in the puerperal state, the diagnosis of puerperal diseases, and on the effects of previous disorder in the puerperal state.

These various subjects are distinguished by those practical characteristics for which the writings of the author are so remarkable. We shall recur to one or two of their most valuable portions in our next volume.

* Med.-Chirurg. Rev., July 1846.

22. *Operative Midwifery. Cæsarean Operation.*—The following cases of this severe operation are added to those already reported in our previous volumes.

Dr. Sclater* was called on the 15th of January, 1846, to the assistance of a deformed woman, aged 31, who had already been twelve hours in labour. The patient was primiparous, and not more than 1 m. 36c. (four feet) in height. The pelvis was extremely oblique, the sacrum depressed, and the right crista ilii one inch higher than the corresponding part on the left side; the uterus was, besides, in a marked state of anteversion. On examination per vaginam, the ischia were found to be separated from each other only by an interval of four or five centimetres; and this was also the extent of the antero-posterior diameter of the brim. The waters had been discharged; the orifice was turned backwards, and dilated to the size of a crown-piece. The pains succeeded each other at short intervals. Dr. Steinbranner having been called in by Dr. Sclater, the operation of hysterotomy was agreed upon, and an incision fifteen inches in length was performed on the linea alba, one half above, the other half below, the umbilicus, and a second section having divided the peritoneum and aponeurosis, the uterus was cautiously incised and the placenta uncovered. The index and medius fingers of the left hand were then introduced, and the placenta detached in its superior part. The wound of the uterus was increased to the extent of the incision of the skin; the feet of the child were seized, and delivery performed without any further obstacle. Between the extraction of the infant and the removal of the placenta, a large quantity of blood was lost, but the hemorrhage was suddenly arrested by delivery, and, the uterus returning rapidly to its natural size, the greatest difficulty was experienced to maintain the intestines in the abdominal cavity. The wound was closed with six quilled sutures. The child was alive, well formed, and strong; one application of leeches on the abdomen was necessary; but the recovery was complete six weeks after the operation.

A case, successful both to mother and child, is related by Dr. Bruks, of Strasbourg. The female was 35 years of age, and greatly deformed by rickets. Labour commenced at 11 p.m., and it was found that the outer posterior diameter was $1\frac{3}{4}$ inches. The next day, at 7 a.m., the os uteri was high up, almost on a level with the sacro-lumbar promontory, and had commenced to dilate; the membranes ruptured at 8 a.m. As the completion of the labour under these circumstances was impossible, the Cæsarean operation was performed in the usual manner. It was followed by peritonitis, and symptoms of crural phlebitis, but these subsided in a few days; and in two months the woman was able to follow her usual avocations. The child was likewise saved.†

Dr. Kunsemuller records three cases of the Cæsarean operation. In the first case, the patient was 41 years of age, and had been previously delivered of six children; at the close of the seventh pregnancy the Cæsarean section became necessary. The child was extracted dead, and the mother died on the next day. In the second case, the patient was 43 years of age, and had had ten children before. The pelvis became deformed by osteomalacia, so that the Cæsarean section became necessary at the expiration of the eleventh pregnancy. The child was dead, and the mother died on the sixth day. In the third case, the patient was 38 years of age, and had been safely delivered of five children. She had been much exposed to want and misery, in addition to disease. Her pelvis became deformed, and at the sixth labour the antero-posterior diameter was found diminished. However, the child was extracted, with some difficulty, by means of the forceps. At the end of the seventh

* Gaz. Méd. de Strasbourg. Med. Times, p. 19.

† Encyclograph. des Sciences Méd., Mai 1846.

pregnancy, osteomalacia had made so much progress that the Cæsarean operation was necessary. Both mother and child were saved.

A case, fatal both to mother and child, is also narrated by Siebold.* (art. 121).

23. *Diseases of the Placenta.*—The diseases of the placenta have been selected as the subject of an inaugural dissertation by Dr. Jæger ;† in which the various lesions to which this organ is amenable are treated of in considerable detail, under the following divisions :—

Hypertrophy of the placenta is described as a simple enlargement of the organ, having no relation to the size of the fœtus, and exhibiting no alteration of structure. When unconnected with other morbid changes, simple hypertrophy of the placenta has no injurious effect upon the life or health of the fœtus.

Atrophy of the placenta is considered by the author to exhibit itself under three varieties :—1. That which depends upon an original defect of nutrition. 2. That which depends upon cessation of the physiological functions of the organ. 3. That which is caused by disease. A placenta in a state of atrophy is sensibly diminished in size, and its colour is variously dark and light. The causes of the change are stated to be those which interfere with the nutrition of the organ, as an originally cachectic constitution, deficient food, and the depressing passions.

The third species of atrophy is commonly the consequence of apoplexy of the placenta, the effused blood compressing the placental blood-vessels, and thus interfering with its further nutrition.

Apoplexy.—In the commencement of placental apoplexy, the extravasated blood is either infiltrated throughout its substance, or collected into isolated patches. The blood varies in colour, being sometimes reddish-brown, at others so dark as to resemble melanotic deposit. If abortion does not ensue, the effused blood undergoes certain alterations, becoming paler, and exhibiting concentric layers, as in an aneurismal sac. In some instances the clot becomes of a calcareous hardness.

The remainder of this thesis is occupied with *inflammation* of the placenta, which he thinks has never been satisfactorily demonstrated; *scirrhus* and *tubercle*, which he affirms have never been met with; and *hydatid* placenta, which is regarded by him as not a true disease of that organ, but one which is seated in the chorion.

24. *Apoplexy of the Placenta.*—M. Paul Dubois‡, in a clinical lecture upon this lesion, remarks that in an extravasation of a placenta so affected, effusions of various dates will generally be found, some ancient, others of quite recent formation. These effusions are generally found near one of the two surfaces of the placenta. In those near the uterine surface the colouring matter of the blood is usually found to be absorbed, and a hard white substance remains, which has been by some observers erroneously called scirrhus. In order to facilitate the comprehension of the usual position of these apoplectic effusions, M. Dubois makes an artificial arrangement of the placenta into layers. When the effusion is near the fœtal surface, the ruptured vessels are of various caliber, but for the most part capillary. When the effusions are small they cause a prominence on the surface of various dimensions. These sometimes exist in great numbers upon the fœtal surface of the placenta, and cause an appearance as of varicose veins.

Next to the effusions upon the surfaces of the placenta come those which are detected in the more internal portion; that is to say, between two layers of tissue perfectly healthy. These, like the former, vary in number and size,

* Neue Zeitsch. für Geburtsk., and Gaz. Méd., 2 Mai, 1846. † Des Maladies du Placenta, &c. Strasbourg, 1846. ‡ Boston Med. and Surg. Journ., April 1846.

which latter may be stated to be nearly the same as for the effusions on the surface. He considers that these effusions are not simultaneous, the proof being, that by the side of the hard, semi-cartilaginous masses formed by the absorption of the colouring matter of the blood and by a duration of considerable length (these masses existing in this variety of effusion, as well as in the former), there are observed some containing only blood in its fluid state, and others in a state of gradation from this to the hard mass. In the interior of these apoplectic cavities a membrane is formed, which contains and circumscribes the effused blood. When the effusion is somewhat more superficial in its location than the last spoken of, and approaches the internal surface of the uterus, it raises up before it in a marked manner the intervening layer of the placenta, sometimes to such an extent as to rupture this layer, although most commonly it only renders it thin. When entirely ruptured, not only is the placental tissue destroyed by the effusion, but the utero-placental vessels, arterial and venous, likewise, thus becoming an additional cause of effusion, and increasing much its quantity, sometimes even to such an extent as to cause external hemorrhage. The internal bleeding and consequent displacement of the placenta is often great; and that organ is forced by the flow of blood into a cup-like form, and this is filled with the effusion in proportion as this latter advances.

As to the precise seat of the primitive lesion, the starting point, M. Dubois thinks that in each variety (viz. 1, the superficial effusion near the membranes; 2, at a slightly increased depth; 3, in the substance of the placenta and hidden or covered by two layers of healthy tissue; and, 4, superficial, near the uterine surface) the fœtal vascular apparatus is the one in fault; with the latter variety, however, some maternal hemorrhage may be combined. M. Dubois expressed himself vaguely (and acknowledged it himself) in speaking of the cause of this condition in the fœtal vascular apparatus; it was something, he remarked, in the primitive organization of the product of conception ("organisation primitive de l'œuf"). These effusions were always the result of a state of congestion, and he thinks the maternal organization is always congested when that of the fœtus is so.

This alteration of the placenta, which, as one would naturally suppose, has a powerfully disastrous effect upon the fœtal life, has been thought ascribable, by some, to the effects of constitutional syphilis. In this opinion M. Dubois does not agree. The effusions and alterations in the placental structure have an effect upon the functions of the organ, analogous to that of similar lesions in the lungs. The death of the fœtus in utero from this cause is much more frequent than has been supposed. The more extensive the lesions of the placenta, the more, of course, its functions are disordered—and the more, also, is the disturbance of the fœtal life manifest, up to a degree which induces its suspension. When very extended, the lesions produce, as it were, a sudden destruction of the placenta, as a healthy organ; most commonly, however, the effusions are not so extended, and in this case there is only languishing of the fœtal life; the motions of the infant are diminished in force and frequency; the mother herself instantly perceives this. If the effusions into the placenta increase, the diminution of muscular action in frequency and vigour is more and more marked. In most cases the mother experiences during the course of these accidents a peculiar feeling of uneasiness, perhaps owing to the state of the parts concerned, and there are partial contractions of the uterus perceived by her, which commence at the same time with the production of the accidents mentioned. The cases of this sort are in their nature grave and troublesome to manage, causing much grief to the mother, especially upon the repetition of the same occurrences in many successive pregnancies, which

take place with a wonderful and lamentable pertinacity, which nothing seems able successfully to combat. M. Dubois has known a like repetition of these same lesions four and five times in succession, and showed the placenta of the last labour, which was filled with apoplectic collections—the child still-born. There was, a few days before these lectures were delivered, a woman at the Lying-in Hospital, in precisely similar circumstances as regards the state of the placenta. She was delivered of a dead child; and M. Dubois says he doubts not that the same thing will occur should she again become pregnant. He spoke, likewise, of a lady, the wife of a celebrated artist in Paris, who had lost three children from the same cause, who, in her anxiety to have a living child, submitted to all the requisitions of his treatment most willingly, and followed them with the greatest exactitude, but without success. The same accidents supervened in each of the three pregnancies at the same period in each—a thing which he has observed to be quite constant. This period varies in different women. He mentioned the above facts, and insisted on the extreme tenacity of reproduction manifested by the disease, in order to show the exceeding great difficulty of the treatment, and its consequent ill success in most instances. With regard to the repetition of these lesions in successive pregnancies, he could not express himself more strongly; he says, "Je ne connais pas un accident que se reproduit avec tant de persistance."

Treatment.—Going back to his statement that "some particular construction of the product of conception, or of the vessels which establish the connexion between the uterus and placenta, gives rise to a congested condition of the organ," he founds the first proposition of his treatment upon that statement. 1. We must diminish the congestion (or modify the circulation) by acting upon the maternal or uterine system. He commences by enjoining the horizontal position to be strictly preserved. There is no cause so efficacious in producing and prolonging a congested state of the organs concerned, as the vertical position. Notwithstanding that this is strikingly true, he stated that he had often met with well-educated physicians who opposed the adoption of the horizontal position.

2d. A diet somewhat restricted.

3d. Complete freedom of the bowels, obtained by emollient injections and mild laxatives, in order completely to avoid any pressure of fæcal matter upon the pelvic vessels, which might cause congestion of the neighbouring organs.

4th. Entire absence of conjugal connexion; the accompanying excitement would seriously augment any existent congestion. A celebrated French midwife, Madame La Chappelle, has remarked that sexual intercourse is an exceedingly frequent cause of abortion. This being true, it is easy to see, likewise, its bearing and influence in the cases under consideration.

5th. Bleeding.—Derivation should be the design in bleeding a patient, affected with the disease in question. Two or three ounces should be taken at a time, at periods preceding (a very short time) the usual menstrual term. Women usually feel a certain uneasiness just before the menstrual flow, and it is at this moment that the congestion of the organs, which always accompanies the function commences; this, then, would be a proper time for a derivative bleeding. Sometimes, this uneasiness exists after the subsidence of the menstrual flux; and in such cases M. Dubois has bled patients with advantage. This latter occurrence is, however rare; when it does occur, the uneasy sensation may be greater, even than that existent previously to the flow, and sometimes simulate the pains felt upon the expulsion of clots after delivery.

6th. In the great majority of cases, the women in whom this affection of the placenta exists, are feeble, anæmic, and affected with chlorosis or an approach

to it. Persons who have thus a thin, impoverished blood, are more exposed than others to partial congestions, the blood not being well distributed; hence arises an important indication, viz., to enrich the blood and strengthen the individual by the preparations of iron. M. Dubois deems it a great error to abstain from the use of these medicines in such cases, from the fear of provoking uterine hemorrhage; he does not consider these preparations as emmenagogues per se, but secondarily, by establishing the system, and thus regulating the functions.

7th. General Baths.—Physicians are apt to think that baths provoke the menstrual evacuation, and thus may suppose that the use of them in cases of placental apoplexy would be injurious by increasing the congestion of the vessels. M. Dubois has often employed them, and has never seen any bad results from them; he thinks them useful.

8th. When the contractions of the uterus which supervene are neglected, they become, from being painless, quite painful. Injections of laudanum, ten drops at a time, may then be given, repeating every half hour. In this way he has exhibited large quantities in a short time—one hundred drops, for instance, in four hours. Taken by the mouth, laudanum is apt in these cases to excite vomiting, which would be injurious by causing the uterus to contract still more. The exhibition of the remedy should be watched with regard to its effects, by a capable person, and continued or suspended accordingly.

The period at which the treatment should be commenced is variable, and must be determined by the time when the accidents make themselves evident. If they have occurred early in a previous pregnancy, the treatment should be commenced early in a succeeding one; for instance, if at the fourth month, begin the treatment fifteen days before that epoch. The period of commencing lesions may be diagnosed, as has been above stated, by diminution in the frequency and force of motion in the infant, arriving sometimes to a degree, which may be styled temporary suspension, the intervals varying. When these circumstances are perceived, it is absolutely necessary to interfere at an earlier period; it would hardly be justifiable to subject the mother to a treatment which, to say the least, requires much patience on her part. The treatment should be invariably commenced by the horizontal position and complete rest.

§ III.—*Diseases of Children.*

Two separate works on the diseases of infancy have recently issued from the press; one by Dr. Coley, entited 'A Practical Treatise on the Diseases of Children;' the other, the tenth edition of Underwood's 'Treatise,' which appears under the superintendence of Dr. Henry Davies. The latter has been so long a standard authority upon the disorders of childhood, that it is perhaps unnecessary to say more than that the present editor has added materially to its value, by incorporating remarks which bring the various subjects contained in it upon a level with the knowledge of the day. This, together with the additions previously made by Drs. Marshall Hall and Merriman, former editors, have indubitably produced the most complete treatise at present possessed by us, in the English language; but it appears to us that there is yet ample room for an entirely new work on infantine pathology, a want which we do not consider to be adequately supplied by Dr. Coley's volume, and we should be glad to see one of the many British practitioners who are competent to the undertaking, engaged in preparing a treatise which should exhibit the industry and talent which have been bestowed upon the description of these diseases by our continental brethren. We have, at present, no treatise which will bear comparison with that of Billard, or Rilliet and Barthez.

25. *Diseases of the Fœtus—Malformations—Communication between the Œsophagus and Trachea.*—Professor Levy, of Copenhagen, relates two cases of this malformation, in the 'Neue Zeitschrift für Geburtskunde.' The first case was that of an infant, apparently healthy when born, but which was unable to suck, and rejected everything that was administered to it. The day after birth a catheter was introduced into the œsophagus, but was arrested at a depth of about four inches. Milk injected through the catheter was immediately returned by the nose and mouth, producing symptoms of suffocation. Closure of the œsophagus was accordingly diagnosticated, and some broth was injected into the rectum. The infant died 83 hours after birth. On post-mortem examination, the upper portion of the œsophagus was found to terminate in a cul-de-sac, in which the catheter, introduced by the mouth, was arrested. This sac was about an inch long, and twice the size of an ordinary œsophagus. The structure of the muscular fibres presented nothing abnormal, except that they converged towards the truncated extremity of the tube. The inferior portion of the œsophagus was connected with the trachea and larynx, so that a catheter introduced through an incision in the cardiac extremity of the stomach passed easily through the trachea and larynx into the mouth. The communication between the trachea and the œsophagus took place about a line below the bifurcation of the trachea, and was formed by an oval opening, three lines long and one line wide. The posterior wall of the trachea and the respiratory mucous membrane were continuous with those of the digestive canal. In the second case, the fœtus was born before the full period of gestation, and died immediately after birth. In this case, Professor Levy found besides, several malformations in the region of the pelvis; that the upper part of the œsophagus terminated in a cul-de-sac, and that the lower communicated with the right bronchus. The communication of the tube with the trachea differed from that in the former case, inasmuch as the œsophagus contained some cartilaginous rings in a part of its extent. With the exception of the case of Martin, republished in the Pathological Anatomy of M. Andral, Professor Levy has never seen any other examples of this malformation than those just related. These cases support the opinion of those who regard monstrosities as arrests of development.*

26. *Tubercular Disease of the Brain.*—The liability of children of the scrofulous habit to the deposition of tubercular matter in the brain and its membranes, and the great obscurity which still envelopes its production, renders the study of the disease one of the highest interest. We are, therefore, indebted to Mr. Adams for a pamphlet in which the subject is exceedingly well handled, both in respect to our general acquaintance with it, and in reference to his own individual experience.

In his examination of the disease, the author has tabulated and analysed as large a number of well-authenticated cases as he has been able to collect, amounting, in all, to 171. In speaking of the diagnosis of the disease, he remarks that a principal element is the presence of the scrofulous diathesis. The age stated to be most amenable to it is that between three and ten years; sex has little or no influence. The symptoms are far from being proportionate to the amount of deposit; tumours of large size often existing for an indefinite time without giving rise to symptoms of cerebral disorder. Headache is generally allowed to be one of the most constant symptoms, and is of a paroxysmal character, and greatly aggravated by vomiting or respiratory disturbance. Of the other symptoms, convulsions are next in frequency, and are often accompanied by muscular tremors and weakness of the limbs, in some cases

* Reported in Med. Times, Aug. 1846.

almost amounting to paralysis. The intelligence of the child is seldom much affected, and the case will often proceed to the end without any aberration of mind. The author agrees with preceding writers as to the variability of the pulse, and its rapid changes from 140 to 60 or 70. The breathing is irregular, and a movement of the lips as in taking food is said to be very characteristic. Tubercles are stated by the author to present themselves in the brain under three distinct forms: 1. Isolated or bounded portions, varying in size from that of a millet-seed to that of masses of several inches diameter. 2. As a layer of tubercular matter, situated between the membranes and external cineritious substance of the brain, commonly following the direction of the sulci. 3. Infiltrated in the substance of the organ. Of these the first is much the most common. On the subject of treatment the author has nothing to advance.*

27. *Acute Hydrocephalus* is so nearly allied in symptoms and termination to the last-mentioned disease, that it may with propriety form our next subject of comment. There are many pathologists, indeed, who look upon hydrocephalus as no more or less than tubercular meningitis, and the great frequency with which the disease occurs in scrofulous children certainly countenances the idea. Rilliet has decidedly expressed himself of this opinion, and attributes the premonitory symptoms of the disease, referred by Cheyne to abdominal irritation, and by Golis to cerebral congestion, solely to a general process of tuberculization, which eventually terminates in localizing itself in the brain or its membranes. He, therefore, in accordance with this opinion, regards any treatment specially directed towards the head in the early stages as useless, but relies entirely at this period upon the hygienic and medicinal treatment suitable to the tubercular diathesis. His chief remedies are cod-liver oil and lactate of iron.

Dr. Stöben, of Strasburg, has remarked a peculiar alteration of the cornea in several cases of acute hydrocephalus shortly before death. It consists in a semi-lunar yellow speck, situated at its lower margin, and unaccompanied by undue vascularity of the conjunctiva. If the case was protracted, ulceration ensued. Dr. Stöben looks upon the appearance as a low form of inflammation arising from debility.

28. *Diagnosis of Meningitis.*—M. Trousseau† alludes to two symptoms which are capable of affording material assistance in the diagnosis of meningeal inflammation in the young subject; one is a peculiarly suspirious breathing, which has also been noticed by Dr. Wilshire,‡ and the other in the production of a redness of the skin on the slightest friction. The character of the respiration is striking; the child takes a long breath, and then remains without breathing for a period of ten to fifty seconds, which interval is then followed by another deep sighing inspiration. The cutaneous phenomenon exhibits itself several days before death, and is important, as it may lead to the correct diagnosis of meningitis, at a time when the nature of the disease is not sufficiently indicated by other symptoms. This redness is so easily made to appear that the slightest pressure of the finger is sufficient to produce it. It does not seem to be connected with the state of fever, as many children with high febrile symptoms did not present it. M. Trousseau affirms that he has found it constantly in every case of meningitis which has been presented to him for some time past.

29. *Coma from Contracted Prepuce.*—At a late meeting of the Medical Society of London, Dr. Golding Bird alluded to the case of a little child eight weeks old which was brought to him in a comatose condition. The mother stated that it had always been dull since its birth, but that this symptom had

* On Tubercle of the Brain in Children. Glasgow, 1846.

† Rep. in Dublin Journ., May p. 546. ‡ Lancet, May 1846.

increased much of late. The first impression excited in the mind of Dr. Bird was that the infant was under the influence of opium, but there was no evidence elicited that such was the case. The head was not so large as to give rise to a suspicion of hydrocephalus, and it could not be ascertained that there had been any injury received. Upon making inquiries as to the passing of the urine, the answer given led to the examination of the prepuce, which was found to be contracted to the size of a pin-hole, and from which the urine was dribbling. It appeared probable, therefore, that the child had never completely emptied the bladder, and hence the symptoms. The prepuce was divided, and the coma was speedily removed.*

30. *Trismus Nascentium.*—The attention of Dr. Sims having lately been called to this disease by the occurrence of several cases in his practice, he has made minute inquiries into its pathology, and has, as he considers, ascertained an exciting cause of the disease not before suspected. It occurred to him to witness the case of a negro who was seized with tetanus on the sixth day after its birth. The case was in most respects similar to the generality, both in symptoms and treatment; its interest consists in the discovery made by Dr. Sims, that there existed a remarkable irregularity in the occipital bones, brought on, as he supposed, by the child having lain on the occiput during the whole of its illness. The condition referred to consisted in a pushing up of the occipital bone upon the brain, and its being overlapped for the space of a quarter of an inch by the parietal bones. Dr. Sims observed with surprise that on placing the child in such a position as to take off the pressure from the occipital bone, and allowing its reposition, the tetanic symptoms became much less severe. After death the following appearances presented themselves: the superficial vessels of the brain were full of dark blood, especially those on its posterior aspect. In the spinal canal coagula of blood were found in its entire length perfectly enveloping the cord. The spinal veins were greatly engorged.

From the examination of this and other cases, some of which are narrated in his essay, Dr. Sims believes that the essential pathological condition in trismus nascentium is first congestion and then rupture of the minute spinal veins. The congestion he considers to be amply accounted for by the displacement of the occipital bone, produced by the careless habit of placing the infant so that it always rests upon that part of the cranium. In order to assist the comprehension of the injurious tendencies of this habit, the author gives a minute description of the anatomical situation of the veins and arteries of the medulla oblongata and spinal cord, from which it appears that if the foramen ovale be projected upward and forward, as it would be the case, by the displacement above mentioned, the column of blood in the meningo-spinal veins which enter that orifice to form a junction with the vertebral veins, would be obstructed as a necessary consequence, and thence the extreme congestion and eventual effusion of blood. This interesting communication concludes with the narration of cases, in which the tetanic symptoms entirely subsided, under the simple precaution of changing the position of the infant.†

31. *Chorea—Nux Vomica in.*—M. Trousseau speaks well of the preparations of nux vomica in the treatment of St. Vitus's dance. He was led to exhibit them from observing the constant presence of incomplete paralysis of one half of the body in this malady, and from a consideration of the usual result of the exhibition of strychnine, namely, the production of tonic muscular contraction. Thirteen cases have been submitted to this treatment

* Reported in the Lancet, May 23, 1846. † Amer. Journ. of Med. Sciences, April 1846.

—ten with complete success. The extract is an uncertain preparation, and strychnine is almost insoluble; Professor Trousseau, therefore, rejects them both, and employs the sulphate of strychnine dissolved in syrup, one grain to ℥iiiss.; ℥iiss. of the medicated solution are at first exhibited daily, in three doses; and the quantity is every day increased five grammes, or ℥i ¼, until itching of the scalp and slight museular stiffness are observed. The cure is generally completed in one month.*

32. *Tracheitis.*—Dr. Purefroy relates a cure of croup, in which much benefit was derived from the exhibition of the iodide of potassium after bloodletting. The infant, aged fourteen months, was seized with severe croupal symptoms on the 22d of Feb. 1846. It was bled from the arm, and emetics and a small blister were ordered with temporary relief. A relapse, however, took place, and on the 25th the child was found lying in the nurse's arms with the head thrown back, and the respiration exhibiting the croupal character in the highest degree. Blood was again abstracted to fainting, and calomel with emetic tartar was given every third hour. On the next day the symptoms had not materially improved, and the prostration had become alarming, it was therefore determined to administer the iodide of potassium, which was accordingly done in doses of a grain every two hours, combined with one grain of the hydrarg. cum cretâ. This together with stimulants and nourishment proved successful.†

33. *Composition of Croup Membrane.*—Dr. Seitz‡ records a microscopic observation of the membranous secretion of croup. It was about half a line thick and of a slight consistence; it was seen to be composed almost entirely of ordinary pus-globules, mixed with inflammation-corpuscles, and a species of cell double the size of the pus-globule, but otherwise similar to it.

For a valuable communication on the surgical treatment of croup, we refer to art. 76.

34. *Pertussis.*—An elaborate essay on this disease has been published by Dr. Aberle, and is reviewed in the 'Lancet' May 28. The treatment is thus laid down. "In the first or catarrhal stage, the usual treatment of bronchitis is to be adopted, caution in depletory measures being enjoined, lest the spontaneous exhaustion induced by the violence of the cough should thereby be increased. In the second, or convulsive stage, he advises mild sedatives and antispasmodies, among which he prefers belladonna in the dose of $\frac{1}{12}$ of a grain of the powdered root, and the ammoniated tincture of cochineal (coccinel. ℥ss, liq. ammon. ℥ss, sp. rectificati ℥viij) in the dose of five drops. As a means of diminishing the excessive secretion, he places great confidence in tannin, either alone or in combination with benzoic acid.

The following prescription of Dr. Graves has been found useful by Dr. M'Gregor:

℞. Tinct. Cantharides
„ Camph. c. āā ℥ ss.
„ Cinchonæ c. ℥ v. M. ft.

The dose a teaspoonful three times a-day.§

35. *Periodic Nocturnal Cough.*—Dr. Behrend,‖ of Berlin, has observed a periodic nocturnal cough in children, which he states has not hitherto been described. It is most prevalent in spring and winter, and is rarely met with in summer. It affects children of all ages, excepting the first few months. The complaint appears in the following manner:—A child who does not exhibit any traces of cough during the day, is awakened during the night by a pa-

* Med. Times, Nov. 14, 1846. † Dublin Journ., May 1846. ‡ Archiv für Physiologie.
§ Lancet, Aug. 8, 1846. ‖ Journ. für Kinderkrankheiten, and Dub. Quart. Journ., May 1846.

roxysm of coughing, which continues for two or three hours, and then subsides. This cough returns at the same hour the succeeding night, persisting for weeks or months, when it disappears spontaneously. The author regards the affection as the result of irritation of the par vagum, and has formed this opinion chiefly from noticing that it is most apt to appear simultaneously with or towards the termination of an epidemic of hooping-cough. The same kind of cough has also been noticed by Dr. Breniss,* who, however, does not find it so regular in its access as the former writer has stated.

36. *Lobular Pneumonia.*—MM. Bailly and Legendre† have contributed a valuable essay upon that condition of the lungs in infants which is usually termed lobular pneumonia. Their object is to deny the inflammatory origin of this condition, and to express their opinion that it is due to deficient expansion of the portion of lung affected, in consequence of which it remains in the condensed state proper to the fœtal period of life. They have adopted this view of the case from the observation that the condensed appearance of the lung in question can be removed by insufflation, which certainly cannot be accomplished in true pneumonic consolidation, although M. Bouchut asserts to the contrary.

Dr. George Augustus Rees‡ vindicates for himself the discovery of the true nature of this state of the lungs, having published upon it as far back as 1839, a date prior to the writings of Barthez and Rilliet, and other French authors who have given a description of it. This author agrees with Bailly and Legendre as to its non-inflammatory nature, and the injurious effects of lowering treatment. He has noticed a peculiar drawing in of the lower ribs during inspiration as very characteristic of this state of lungs.

37. *Peritonitis of New-born Infants.*—The 'Archives Générales'§ contain a memoir by M. Thore, which has for its object the elucidation of a form of peritoneal inflammation which is liable to attack the new-born infant. The symptoms of the disease first exhibit themselves in the rapid and extensive occurrence of meteorism, with a peculiar prominence of the umbilicus, which Duges considers almost pathognomonic. The abdomen is usually remarkably sonorous, but in some instances this sound is rendered more dull by the presence of fluid. Tenderness on pressure is constantly present. Vomiting is regarded by the author as a symptom of great value, having been absent in three cases only out of 25 witnessed by him. The fluid ejected was generally of a grass green colour. Constipation is also a common symptom. The state of the tongue offers nothing peculiar. The pulse is always quick, sometimes as high as 200; such cases speedily terminate fatally. The heat of the skin is preternaturally great, and the respiration often reaches from 40 to 60 in the minute. The author has never noticed the peculiarly irregular respiration mentioned by Bouchut.

The progress of the disease is usually very rapid, cases being narrated in which it terminated in fifteen hours from its first appearance.

The diagnosis is regarded as sufficiently easy when the above-mentioned group of symptoms is present, and more particularly if at the same time there is erysipelas of the abdominal parietes. The disease with which it may most readily be confounded is the 'gelatiniform softening,' of the stomach, but in this there is usually diarrhœa rather than constipation, and the matters ejected by vomiting are also different. It is difficult, also, to determine whether the symptoms arise from simple peritonitis or from intestinal obstruction. This difficulty is illustrated by a case.

Causes.—The disease declares itself most commonly within the first fortnight of life, after which it becomes comparatively rare. The author is per-

* Journ für Kinderkrankheiten, and Dub. Quart. Journ. May 1846. † Archives Gén. 1845. ‡ Lancet, July 11, 1846. § August, September.

fectly aware that it may be in some cases an intra-uterine affection, and alludes to a paper upon the subject by Professor Simpson, of Edinburgh. Sex has little or no influence. Season exhibits very considerable power as a predisposing cause, the spring being the time in which the disease is most prevalent, winter in which it is least so. The influence of the *puerperal constitution* or state is regarded as very important. In our First Volume, p. 244, we have mentioned the connexion between puerperal fever and aphthæ as observed by MM. Trousseau and Delpech; the truth of their observations is fully admitted by the author of the present memoir, who also remarks upon the frequent occurrence of erysipelas of the cord under similar circumstances, and though he was not able to determine the existence of puerperal disease in the mothers of the affected infants for obvious reasons, he does not doubt that if the identity of these females could have been traced, such a cause would have been found to exist.

Among the causes to which the author has been able to trace the disease with certainty he mentions erysipelas of the abdominal integuments, and disease of the contained viscera. That an intimate connexion between erysipelas of the integuments and peritonitis does exist the author proves, by showing that in 26 cases of erysipelas, peritonitis was present 17 times. He has also seen the disease as a consequence of malformation of the intestinal canal with obstruction, of which he gives cases. Inflammation of the umbilical vein is a very frequent cause.

The author, in mentioning the complications of this form of peritonitis, gives the following résumé of the cases which occurred to himself. Erysipelas coexisted in 16; umbilical phlebitis in 4, the two conjoined in 1; pneumonia in 10; pleurisy and pleuro-pneumonia in 9; muguet in 9; enteritis in 5.

Treatment.—As regards curative treatment, M. Thore gives us litle encouragement; but he very properly lays great stress on prophylactic measures; thus he insists upon the greatest attention being paid to the state of the cord, both at the time of applying the ligature and afterwards, especial regard being had to the earliest appearance of ulceration or erysipelatous redness. He dissuades early vaccination, and more particularly the practice of vaccinating on the thigh, as seems occasionally to be followed in France. Should the mother be the subject of secondary syphilis, or of a puerperal affection, he counsels that the infant should at once be confided to a wet-nurse. As curative means, he advises two to four leeches to the umbilicus (rather a hazardous proceeding we should imagine in the case of an infant a fortnight old), mercurial inunction, warm baths, fomentations, and, if the disease prove obstinate, blisters to the abdomen.

38. *Fissure of the Anus in Infants.*—It is not commonly known that children at the breast are often liable to this painful disease, but that such is the fact is demonstrated by the experience of M. Trousseau* at the Necker Hospital. The characters of the complaint are well illustrated in the following two cases reported by M. Duclos, and we give them insertion as calculated to call our readers' attention to the possibility of such an explanation of certain ill-defined intestinal sufferings in infants.

The first case is that of a little girl, one year old, who had been constipated from her birth, but more especially for the four previous months, the bowels being moved only every third or fourth day. Two months previous, the mother remarked that every time the bowels were opened the child screamed violently. The pain appeared to commence with the effort of defe-

* Journ. de Chirurgie, Mai 1846, and in Philadelph. Med. Exam., Aug., from Lancet.

cation, to continue during the passage of the fæcal matter, and to be prolonged for a few seconds afterwards. For the last month, more especially, defecation had been exceedingly painful, and at each stool the child had voided a few drops of blood, either before or after the fæces, but never mixed with them. Sometimes the child, after a violent effort, would void a few drops of pure blood, scream violently, and make an effort as if to prevent the escape of fæces, in which case no stool took place. The general health was very good.

On examining the anus, the following was found to be the state of the parts: the circumference of the anus was perfectly healthy, but on deeply separating the folds, at the anterior part and between two folds of skin, a fissure, a millimetre in width and about five milimetres in length, of a red colour, was distinctly perceived. It was the more clearly seen, as the child, screaming violently, protruded the anus. The constriction at the anus was so great that the extremity of the little finger could scarcely be introduced. M. Trousseau prescribed an enema, composed of extract of rhatany, one scruple; water, three ounces. The child kept the injection for five minutes, and returned it along with soft fæces. The injection was repeated daily for five days. Each time the passage of the fæces appeared less painful, and on the sixth day the injection was discontinued. The motions were then easy, free from mixture with blood or pus, and unaccompanied by pain. The child left the hospital ten days after, quite cured of the anal affection.

The second case occurred in M. Trousseau's private practice. The child, eight months of age, well developed, and in previous good health, had been suckled by the mother until the age of six months and a half. At that epoch it was weaned, and was subsequently attacked with violent diarrhœa, which gave way under the use of emollients. The diarrhœa was followed by obstinate constipation. This state had existed for about eight days, when the child was seized, during defecation, by violent pain at the anus, and the fæces were found tinged with blood. From that time the child suffered great pain on defecation, and for some minutes afterwards. The fæces were hard, and generally tinged with a few drops of blood. The child was constipated. General state satisfactory. On examining the anus, around its orifice there were found a little erythema and eczema, which had been occasioned by the diarrhœa, and were fast dying away. Behind, and to the left, on separating the folds of the anus, a fissure about two millimetres in length and one in depth, and of a rose colour, was discovered. The same treatment was adopted, and with equal success, the fissure cicatrizing completely in ten days.

In these cases, observes the reporter, the fissures were perceptible to the eye; but the seat of the pain, the mode of its manifestation, and slight hemorrhage would have called attention to it independently of ocular evidence. The author has observed some difference in the symptoms in infancy and in the adult; in the latter the pain is most severe during the first hour or two following defecation; in the children, whose cases are reported above, the pain seemed most intense at the moment of passing of the motion, and ceased a few minutes after. The rapid benefit which followed the use of the rhatany injections is worthy of note.

IV.

REPORT ON THE PROGRESS OF HUMAN ANATOMY AND PHYSIOLOGY.

BY WILLIAM S. KIRKES, M.D.

§ I.—*The Blood.*

1. *Corpuscles of Blood, and their Development.* — The most important results which Mr. Wharton Jones obtained from his investigation into the development of the blood-corpuscles in the different orders of animals were briefly noticed in a preceding report,* the materials of which that notice was composed being derived from a short abstract of Mr. Jones's paper, published in the 'Annals of Natural History.' The paper itself, however, having recently appeared in the 'Philosophical Transactions,'† requires to be noticed at greater length than it could be before. One of the chief points which Mr. Jones appears to have established in these investigations, is that to a certain extent there is a great resemblance both between the general characters of the blood-corpuscles in all classes of animals and in the mode in which these corpuscles are developed. The only difference consists in the extent to which the process of development is carried: for example, in invertebrate animals the corpuscles attain a certain degree of development, in the oviparous vertebrata the development extends somewhat further, and in man, and in the mammalia generally, it proceeds further still; the early stage, however, being the same in all. Inasmuch as the blood of the oviparous vertebrata (in which class are included all vertebrate animals below mammalia) is, in regard to the character of its corpuscles, and the degree of development to which these corpuscles attain, intermediate between that of the invertebrate animals and that of mammalia, the chief peculiarities which it presents in this class of animals may be described, in order to illustrate better the same things in the blood of man. The frog will serve as a familiar example of this class. In the blood of this animal are observed two principal kinds of corpuscles: one consisting of small, pale, spherical bodies, with a granular surface, and usually described as white or lymph-corpuscles; the other of larger, oval, and slightly coloured bodies—the ordinary red corpuscles. Both are cellular in their structure, and nucleated, the latter decidedly so, the former less so; indeed, in the pale corpuscle the cellular structure is not shown until after the action of water, nor the nucleus until after the action of acetic acid. These two sets of bodies constitute, according to Mr. Jones, different phases in the development of the same corpuscles. The first described corpuscles constitute the phase of *granule-cell;* the second, the

* Half-yearly Abstract, Vol. II, p. 300. † 1846, pp. 63-101.

phase of *nucleated cell.* In each phase there are two stages: that of the granule-cell consisting of cells first in a *coarsely granular* state or *stage*, and subsequently by the absorption of many of the granules, in a *finely granular stage;* whilst that of the nucleated cell consists of corpuscles, first, in an *uncoloured* state or *stage*, which results from a complete absorption of the granules, and a more distinct appearance of the nucleus; and secondly, in a *coloured stage*, in which the previously clear cell has filled with red colouring matter. In the uncoloured stage of this latter phase the cell-wall is so very pale, and so closely surrounds the nucleus, that it has hitherto escaped detection, and the corpuscle has been described as a free nucleus. By the addition of water, however, the cell distends, and the outline of its pale wall is rendered perceptible.

The coarsely granular stage of the granule-cell appears to be the earliest form in which the blood-corpuscle occurs, and the coloured stage of the nucleated cell to be the same corpuscle in the highest degree of development to which, in the frog and in other oviparous vertebrata, it attains. In all these animals, the same kind of blood-corpuscles are found as in the frog, and, consequently, the same phases and stages of development are passed through. There is one exception to this rule, which occurs in a fish belonging to a very low order, the branchiostoma lubricum, in which the blood is colourless, or nearly so, and in which, therefore, the corpuscles probably do not pass to the perfectly coloured stage. A difference is observed also between the nucleus in the corpuscles of the frog and that in the corpuscles of the skate: in the latter animal (as probably also in many others) the nucleus, both of the granule and of the nucleated cell, is distinctly cellæform, whilst in the frog, although it is cellæform in the granule-cell, yet it becomes dense and solid-looking in the nucleated phase, especially in the coloured stage.

In the blood of the invertebrata the corpuscles closely resemble those in the blood of the animals just described, with the exception that they do not proceed in their development to the stage of the coloured nucleated cell. They consist of granule-cells in the coarsely and finely granular stage, and of uncoloured nucleated cells; but at this latter stage the process of development stops. In the blood of man and the rest of mammalia, however, the development of the blood-corpuscles is the same as that in the oviparous vertebrata up to the stage of coloured nucleated cell; but it goes yet a step beyond, and in this consists the chief novelty and importance of Mr. Jones's investigations. To illustrate this point more completely, it will be better to follow him in his account of the corpuscles found in the blood of mammalia generally, both in the embryonic and adult state.

2. *Corpuscles in the Embryo, and their Development.*—In the blood of an embryo ox, about an inch and a quarter long, Mr. Wharton Jones found granule-cells in both the coarsely and finely granular stages described above; also nucleated cells, in both the uncoloured and coloured stages. So far, therefore, the corpuscles were exactly identical with those found in the blood of the frog as described above. Over and above these, however, there were observed a few small, red, unnucleated corpuscles, similar to those which constitute the majority of the corpuscles in the blood of the adult animal. There were also noticed a very few corpuscles similar in size to the latter, but colourless; these doubtless were red corpuscles still in process of development. Some observations recently made by Kœlliker* on the blood of the mammalian embryo coincide in many respects with the above. Having examined the blood of a human embryo of the third month, he describes the corpuscles present therein as consisting of

* Henle und Pfeufer's Zeitsch. iv, 1845-6; noticed in Schmidt's Jahrb. p. 272, 1846.

three kinds: coloured nucleated ones; coloured non-nucleated ones; and colourless ones. The first variety, in the blood of the portal and hepatic veins, constituted about one fourth, and in the blood of the rest of the body, about from one sixth to one eighth of the whole number of coloured corpuscles; the diameter of most of them was about $\frac{1}{250}$ of a line: they were smallest in the blood of the liver. The majority were flattened, a few depressed on the surface, a few others quite globular, whilst some (but these only in the liver) had a roundish oval form. In the blood of the liver these corpuscles were of all shades of colour, from a pale yellow to a reddish yellow, and in some (as in all the nucleated blood-corpuscles in the rest of the body) the colour was so deep that the nucleus could not be seen until brought into view by chemical reagents. Water and acetic acid acted on these corpuscles just as they do on those of an adult. [So far this account corresponds very closely with the one given by Mr. Jones.] The nuclei of all were parietal, and in the flat ones were situated at the margin of the corpuscle. In the majority of the corpuscles of the liver, and in all those of the body, the nuclei were single; but in a few of the former two or even three were found in each corpuscle, in which case they did not lie together, but occupied two opposite points in the round corpuscles, and the extremities of the long diameter in the elliptical ones. They possessed a flattened, roundish, seldom an oval, form, were vesicular in structure [as shown also by Mr. Jones], and mostly granulated; one larger granule than the rest probably constituted a nucleolus. They were insoluble in water and acetic acid, but by the latter reagent were occasionally resolved into two granular particles. [This effect, according to Mr. Wharton Jones, is due to the shrivelling of the walls of the cell by the action of the acid; it does not take place if the acid is very dilute.] The coloured non-nucleated corpuscles constituted the majority of all the coloured ones, were flattened, and measured from about $\frac{1}{337}$ to $\frac{1}{250}$ of a line in diameter. With the exception of being somewhat irregular in form, they exactly resembled the blood-corpuscles of an adult. The colourless blood-corpuscles (which are different from the colourless cells found in the earliest formation of the blood) occur chiefly in the liver; a few are found in the inferior cava previous to the entrance of the hepatic veins into it, in the heart, and very sparingly in the blood of the rest of the body, and in the umbilical vein. They were almost all globular, seldom elliptical, and measured on the average from $\frac{1}{330}$ to $\frac{1}{250}$ of a line in diameter. They were each composed of an investing membrane; of a clear, colourless, or pale yellow fluid contents, with which was sometimes mixed a greater or less quantity of small granules; and of a granulated, often distinctly vesicular, nucleus, which varied in size, the smallest occurring in the pale yellow corpuscles, the largest in the large corpuscles which possessed granular contents. In the latter, they were frequently double or treble, but in the former always single. Towards reagents they acted like the nuclei of the coloured corpuscles. [These pale corpuscles are clearly the same as the granule-cells of Mr. Wharton Jones.]

The account which Kœlliker gives of the development of blood-corpuscles in the embryo may be mentioned here. According to him, the earliest formed blood-corpuscles in the mammalian embryo are nucleated colourless cells, filled with granular contents, and in all respects completely identical with the formative or vitelline cells, of which all other parts of the early embryo consist. The spaces in the vascular layer of the embryo, which are subsequently to constitute blood-vessels, are at first solid and composed of vitelline cells, just like the surrounding parts, from which they do not apparently differ. Shortly they become distinguishable from the surrounding substance, and their contents become fluid in consequence of many of their cells dissolving, and forming a kind of plasma in which the remaining cells float. These latter

cells are shortly converted into coloured nucleated blood-corpuscles by losing their granular contents, assuming a nucleus, and filling with coloured matter. These coloured corpuscles for a while go on multiplying, either by actual division or by the formation of two or three smaller corpuscles within a larger one, which subsequently dissolves away and liberates its contents. So soon, however, as the liver of the embryo is developed, this multiplication of corpuscles in the entire mass of blood ceases, and in its stead there now takes place in the vessels of the liver alone an abundant formation of new colourless cells, which are developed into coloured nucleated corpuscles, either at once or not until they have multiplied themselves, either by division or by the formation of several smaller cells within a large one. This new formative process in the liver probably goes on during the whole period of embryonic life. The new formed, coloured, nucleated cells gradually become flattened, lose their nuclei, and are thus converted into the non-nucleated corpuscles. The formation of these latter commences as soon as the colourless corpuscles begin to be formed in the liver; and the older the embryo is the more abundant do they become.

3. *Blood-corpuscles of Man, and their Development.*—The blood-corpuscles of man, and the mammalia generally, as is well known, are of two kinds: one (which constitutes by far the largest proportion) being circular, flattened, unnucleated, and coloured; the other pale or colourless, spherical, and granular. The former are the red corpuscles, the latter the white or lymph-corpuscles. The white corpuscles, although regarded as identical with the corpuscles of the lymph, and usually considered as being but of one kind, have, however, been noticed by many observers to present varieties, both in size and in structure, and this peculiarity is especially remarked by Mr. Wharton Jones. He states that the majority of the white corpuscles are really lymph-corpuscles, and constitute the phase of granule-cell in the development of the blood-corpuscles, and that they occur in the two stages of this phase, the coarsely and the finely granular stage. There are, moreover, other corpuscles, which have been hitherto described under the name of white corpuscles, and these are corpuscles which possess a nucleus surrounded by a very pale cell-wall, and constitute, as in the frog, the uncoloured stage of the nucleated-cell phase. It is difficult to recognize these latter corpuscles, for the cell-wall is so delicate that it speedily collapses after removal from a vessel: by the addition of water, however, the cell is distended, and with its vesicular nucleus becomes very perceptible. The next stage in the development of the blood-corpuscles, that of the coloured nucleated cell, which constitutes the ordinary red corpuscle in the oviparous vertebrata, Mr. Jones has never yet found in the blood of adult man, though he has observed it in the blood of the horse and of the elephant. This appears a serious objection to Mr. Jones's view of the uniformity of plan in the development of the blood-corpuscle in all classes of the animal kingdom, but it is not improbable that the absence of corpuscles in this stage, and their comparatively rare occurrence in the stage of uncoloured nucleated cell in the blood of man, may be due to the rapidity with which the process of transformation from the lowest to the highest form of development of the blood-corpuscles takes place. In accordance with Mr. Jones's view of development, the red corpuscle in the blood of man and the rest of mammalia is the escaped nucleus of the coloured nucleated cell, and is, therefore, analogous, not, as is generally supposed, to the red corpuscle in the oviparous vertebrata, but to the nucleus in these corpuscles. So that, whilst in all other animals below the mammalia which possess red blood, the development of the blood-corpuscles proceeds only to the stage of coloured nucleated cell, in the mammalia it passes through another phase,

which consists in the red nucleated cell breaking up and liberating its vesicular nucleus, which gradually fills with colouring matter, and becomes the red unnucleated corpuscle of mammalian blood. This, which is the third and highest phase of development, Mr. Jones calls the phase of *free cellæform nucleus*. In favour of this opinion, he observes that there is an almost exact correspondence in size between the cellæform nucleus of the nucleated cell and the red corpuscle; and that in those animals which have small red corpuscles, as the goat, the nucleus of the nucleated cell also is small, whilst in those which have large red corpuscles, as the elephant, the nucleus also is large. He also found that although in the camel tribe the corpuscles are oval and the nucleus round, which at first would seem to be opposed to his view, yet in reality the nucleus, after its escape from the cell, gradually assumes the oval form, at the same time that it deepens in colour. The only point in which there is a difference in structure between the nucleus of the nucleated cell and the red corpuscles is in the colouring matter which the latter have obtained; but Mr. Jones has shown that this is a change which gradually takes place after the nucleus leaves the cell, and is, therefore, but a part of its further development. This view of the nature of the red corpuscles in mammalia (if correct) sets at rest the dispute as to the existence of a nucleus in them, for these corpuscles must now be regarded as the analogues not of the red corpuscles of all the vertebrate animals below mammalia, but of the nuclei of these corpuscles in a more highly developed state. Concerning the oval corpuscles in the blood of the camel tribe, Mr. Jones has observed that in the paco these corpuscles become circular on the addition of water. A point in regard to the colour of the red corpuscles also requires to be mentioned: he sometimes found corpuscles in which only the centre was red, the circumference being bright and colourless, a circumstance which would seem to prove the correctness of the view that the colouring matter is confined to the interior of the cell, and is not lodged in the cell-wall.

That the red corpuscles in the blood of adult mammalia are developed from the pale or lymph-corpuscles is maintained also by Kœlliker.* But he adopts the view advocated by Dr. Baly, several years ago,† in regard to the blood of vertebrate animals generally, that the pale corpuscles are directly transformed into the red ones, and are, therefore, only these in an early stage of development. The identity of the pale corpuscles of the blood with the lymph-corpuscles, he also admits; and considers that the red corpuscle is formed out of these simply by the disappearance of the nucleus and the absorption of colouring matter. Mr. Hassall‡ considers that the view of the transformation of the white corpuscles into the red by any process is erroneous, and that the white corpuscles are totally distinct from the red ones, both in origin, structure, and function.

4. *Red Corpuscles, relation of to Air.*—It was shown by Berzelius, and more recently by M. Figuier, that if defibrinated blood be mixed with three or four times its volume of a saturated solution of sulphate of soda, and the liquid then filtered, the red corpuscles will remain behind uninjured on the filter; and an easy method was by this means obtained for estimating the quantity of the corpuscles. The fact thus ascertained has led to some further researches on the part of M. Dumas,§ who has obtained many curious results

* Lib. cit. † Translation of Müller's Physiology, p. 156. ‡ Microscopic Anatomy of the Human Body, Part ii, p. 56. Mr. Hassall gives a full and good discussion of the several questions relating to the origin, nature, and ultimate condition of the blood-corpuscles. § Proceedings of the Acad. Roy. des Sciences de Paris, 1 Juin 1846, in Archiv. d'Anat. Gén. et de Physiol., Juillet; Encyclo. des Sciences Med., Juin; and in other French journals of the same date.

relating to the properties of the red corpuscles. He finds that unless the defibrinated blood be quite fresh the experiment will not succeed; for when kept for a few hours the filtered liquid does not pass through colourless (or faintly yellow) as it ought to do, but is tinted with the colouring matter of the corpuscles. Even if the blood is quite fresh, however, and the liquid filters through at first limpid and colourless, yet on pouring fresh quantities of the saline solution on the corpuscles remaining in the filter, the liquid which passes through shortly assumes a reddish colour, the intensity of which gradually increases until it becomes quite deep: a fact which proves that the corpuscles have lost their power to resist the solvent action of the saline solution. M. Dumas has found, however, that so long as the corpuscles are freely supplied with air (as by blowing a current of it through the fluid with a tube), they retain their bright arterial colour, and may be thoroughly washed with the saline solution without being dissolved by it; but if they are unsupplied with renewed quantities of air and are left at rest, they soon acquire the deep colour of venous blood, and then become unable to resist the solvent action of the salt, so that the fluid which passes through the filter is, in consequence, coloured red. Several other substances besides sulphate of soda enable fresh-drawn blood to preserve its corpuscles entire, and to retain its property of becoming arterialized on exposure to air. Phosphate of soda which, together with the sulphate, exists naturally in the blood, possesses this property in a still more marked degree when a saturated solution of it is added to the blood. Many of the salts formed with organic acids also, especially those whose base is soda, have the same property. On the other hand, the chlorides of sodium and of potassium, and the hydrochlorate of ammonia do not possess this property. [M. Bonnet,* however, says that the former salt does.] This capability possessed by the blood-corpuscles when freed from albumen and fibrine of undergoing change of colour on exposure to the air, is, in the opinion of M. Dumas, strongly favorable to the view that these corpuscles are the agents chiefly concerned in the absorption of oxygen which takes place in the blood during the process of respiration. [That the red corpuscles probably take an active part in the changes undergone by the blood during respiration is shown by the fact that serum deprived of red corpuscles absorbs a much less quantity of oxygen than when these corpuscles are present.]

M. Bonnet† also has performed numerous experiments on the same subject. He found that sugar exerts the same preservative effect on the corpuscles as sulphate of soda does, and he noticed that many animal and vegetable substances which have a powerful effect on the system, exert no influence on the corpuscles when added to blood thus mixed with sugar, whilst other substances, on the contrary, at once neutralize the preservative power of the sugar, dissolve the corpuscles, and give to the blood a dark colour. Among the vegetable substances belonging to the former class on which he experimented were hemlock, nux vomica, belladonna, acetate of morphia, rue, ergot of rye, quinine, &c.; among the animal substances were milk, urine, and fresh inodorous pus. To the second class M. Bonnet adds several others to those already mentioned by M. Dumas; for example, dilute sulphuric and oxalic acids, all the alkalies, and all ammoniacal salts, especially the hydro-sulphate of ammonia, the smallest quantity of which is sufficient to neutralize the preservative influence of the sugar. It seemed probable that in certain conditions of disease the composition of the blood might be so far altered that when withdrawn from the body and mixed with sugar it would not retain its

* Gazette Méd. 22 Août 1846. † Loc. cit.

property of assuming the arterial tint on exposure, and of preserving its corpuscles in their integrity; M. Bonnet accordingly examined in this way several specimens of blood drawn from subjects suffering from various affections, but observed no difference in it in this respect. MM. Dujardin and Didiot,* however, who have pursued the investigation, find that in some cases, such as inflammation, blood defibrinated and treated with sulphate of soda on a filter, allows the filtered fluid to pass through quite clear, whilst in typhus, and several other affections, the fluid filters through more or less colonred.

5. *Size of Red Corpuscles.*—The statement advanced by Mr. Gulliver,† that in birds there exists, as a general rule, a close relation between the size of the red corpuscles of their blood and that of their body, has received strong confirmation in the case of the humming-bird, whose blood has been examined by Dr. John Davy.‡ The red corpuscles in this, which is, probably, the smallest of the entire class of birds, are not more than $\frac{1}{2666}$th of an inch in their long diameter, and $\frac{1}{4000}$th in their short diameter; their nucleus measuring also about $\frac{1}{4000}$th of an inch. These corpuscles are very thin and flat, the nucleus being slightly raised, and corresponding in outline with the disc. The temperature of the blood was 105° Fahr.

In the same communication Dr. Davy gives the measurements of the red corpuscles in several fishes; and he observes that in all cartilaginous fishes these corpuscles are very much larger than they are in the osseous ones, and that the nucleus is very distinct. He found that in fœtal sharks the corpuscles were oval, as they are in the adult.

6. *White Corpuscles of the Blood.*—An explanation has been given by Mr. Wharton Jones,§ of an appearance which these corpuscles frequently present beneath the microscope, of discharging their granular contents. The deception is produced thus: a portion of the clear cell-wall of a corpuscle bulges out, leaving the granular particles adhering together in their globular mass; presently several of these particles leave the general mass, and run into the space produced by the bulging, which they shortly fill. Another bulging presently takes place, and is in like manner filled with particles; and so the process may occur successively at several parts of the corpuscle. The contents, therefore, do not escape, but the cell-wall merely changes its form.

7. *Coagulation of the Blood, Effects of Temperature on.*—Mr. Gulliver‖ has given the results of some experiments undertaken with the view of determining how far a moderately high temperature is favorable to the occurrence of coagulation. His experiments were performed on blood drawn from the jugular veins of horses, and consisted in dipping very thin glass tubes, containing the blood, in water of different degrees of temperature. Operating in this way he subjected portions of the blood to the action of heat at every degree between 139° and 151° Fahr., and found that in each case the blood was fluid at the end of twenty minutes, and that it never afterwards coagulated completely. When immersed in water heated to any degree between 122° and 126° Fahr., coagulation of the blood, and of liquor sanguinis alone, was accelerated about two minutes. This acceleration was rather more marked at the lower than at the higher degrees. He does not state the effects on the coagulation of blood alone, of higher or lower degrees of temperature than the extremes above mentioned.

It was believed by Mr. Hunter that in the bodies of persons killed by lightning, by blows on the stomach, and in those of animals hunted to death, the blood never coagulates, neither does rigidity of the muscles occur.

* Gazette des Hôpitaux, 29 Sept. 1846. † Hewson's Works, edited for the Syden. Soc., 1846, p. 219. ‡ Proceedings of Zool. Soc. in Annals of Nat. Hist., July 1846. § Lib. cit. ‖ Hewson's Works, edited for the Syden. Soc., p. 5, note iii.

Several cases, however, have of late years been recorded in which death from these causes was followed both by coagulation of the blood and by rigidity of the muscles. Mr. Gulliver* observes that he found distinct though small clots in both ventricles of the heart, in a hare examined four hours after it had been hunted and killed by harriers. He admits, however, that portions of blood drawn from the jugular veins never coagulated; and that a quantity which was found in one of the pleural cavities never clotted, though it was thick, and when mixed with water and filtered, a few fibrinous flakes were obtained from it. The heart was hard and contracted, and the limbs were quite rigid. With regard to the effect of blows on the stomach in preventing coagulation, he found coagulated blood in the heart, and the limbs rigid, seventeen hours after death in a cat killed by a kick which ruptured the stomach and liver.†

§ II.—*Circulation.*

8. *Impulse and Action of the Heart.*—Several arguments have been advanced by Dr. Kiwisch Ritter‡ against the explanation at present given of the cause of the heart's impulse against the walls of the chest. According to modern views, the impulse is produced, mainly, by the tilting forwards and upwards of the apex of the heart, which is thus caused to strike against the walls of the chest, during the ventricular contraction; whilst during the diastole it is supposed to recede somewhat from the thoracic parietes, preparatory to being again tilted forward on the next occurrence of the systole. In the opinion of Dr. Ritter, this explanation is incorrect, because it is contrary to the principles of physics, and is not substantiated by experiments on living animals. He states, for example, that he has frequently watched the movements of an exposed heart in living animals, but has never detected, even during most violent contractions, the slightest change in the actual position of the organ. [In a case of ectopia cordis, which fell under Dr. Mitchell's§ notice, the movements of the heart were watched for a considerable time, and it was observed that the apex was not elevated during the contraction of the ventricles. Yet by Valentin and others the tilting movement has been distinctly observed in exposed hearts; and was found to continue even after the apex of the organ was cut off, as shown by Valentin.‖] Dr. Ritter maintains that the portion of the heart's surface which is in immediate relation to the walls of the chest is at all times in close contact with them; and that it is impossible that during any part of its rhythm, the heart can act with so much force as to withdraw itself from the thoracic walls, so as to leave a space between them. Being thus fixed, therefore, it follows that when the heart contracts, and so assumes a more globular form, it will exert its distending force on the yielding intercostal spaces against which it rests, and will thrust them forwards, so as to produce the impulse. This distending force cannot be exerted with any effect against the unyielding ribs or their cartilages, and consequently the impulse is not perceived by a finger placed over the cartilage of either the fourth, fifth, or any other rib. Yet if the impulse was caused by an actual stroke or blow of the heart against the walls of the chest, it would be perceived on these parts and on the sternum

* Works of Hewson, edited for Syden. Soc. 1846, p. 21. † A case, in which complete rigor mortis occurred after death from lightning, is mentioned in the Northern Journ. of Med., Oct. 1846. ‡ Schmidt's Jahrb. No. iv, 1846. Extracted from Prag. Vierteljahrs. i, 1846. § Dublin Journal of Medical Science, Nov. 1844. ‖ Lehr. der Physiol., Bd. i, p. 467, &c., quoted in Mr. Paget's Rep., Part i, 1843-4.

as clearly as it is in the intercostal spaces. Each individual, also, in this case, he says, would feel the impulse of his own heart just as a pregnant woman feels any violent movements made by the fœtus in utero.

The effects produced on the action of the heart by the application of a continued stream of electricity to the spinal cord, nervus vagus, &c., as shown by the experiments of Volkmann, Dr. J. Reid, and the Webers, were fully detailed in our last Report.* Similar experiments have been since performed, by Dr. Budge, of Bonn.† He found that no interruption of the movements of the heart took place, when any part of the spinal cord itself was irritated by the rotating magnet, but when the stimulus was applied to the medulla oblongata, complete cessation of the heart's action ensued, and continued until the irritation was withdrawn. Similar irritation applied to the vagus nerve also caused the heart's action to cease.

9. *Nerves and Ganglia of the Heart.*—Dr. R. Lee‡ describes the existence of numerous ganglia and plexuses of nerves distributed through the muscular structure of the heart, and surrounding the blood-vessels within its substance. These appear to be something more than the gangliated organic nerve-fibres described by Remak.§ From examinations which Dr. Lee has made of the fœtal heart—of the heart of a child at the age of six years—of the heart of an adult in a sound state—of the human heart greatly hypertrophied, and of the heart of the ox, he is led to the following conclusions:—1st. That the nervous structures of the heart which are distributed over its surface and throughout its walls, to the lining membrane and columnæ carnæ, enlarge with the natural growth of the heart before birth, and during the periods of childhood and youth, continuing to increase until the heart has attained its full size in the adult. 2d. That when the walls of the several cavities of the heart are affected with hypertrophy, the nerves and ganglia distributed to them enlarge like those of the gravid uterus.‖ 3d. That the ganglia and nerves which supply the left auricle and ventricle, in the natural state, are more than double the size of those which are distributed to the right side of the heart.

10. *Relative Areas of arterial Trunks and Branches.*—A few experiments have been performed by Dr. Harden,¶ with the view of determining the relative areas of the trunks and branches of arteries. From the results of these experiments he is inclined to believe that the sum of the areas of branches is not greater than, but just equal to, the area of the main trunk. The experiments of Dr. Harden are so few and unsatisfactory, particularly when compared with the numerous ones so elaborately worked out by Mr. Paget,** that the opinion of the latter gentleman, that generally the joint area of branches is rather greater than the area of their trunks, must still be regarded as most probably the correct one.

11. *Circulation in the Glands of the Frog's Tongue.*—The manner in which the blood circulates through the glands of the frog's tongue, has been described by Dr. Waller. At one side of the base of the gland a blood-vessel enters, and after forming a coil of several folds, which occupies about half the substance of the gland, it passes out again, usually at a point of the base oppo-

* Abstract, Vol. III, p. 282. † Communicated to the Lancet, May 23, 1846, p. 581; also in Müller's Archiv, Heft iii, 1846, p. 295. ‡ Med. Gaz. Nov. 6, 1846. § Casper's Wochenschrift, No. x, 1839, and Müller's Physiol. by Dr. Baly. Second edition, p. 203. ‖ It is beyond the province of this Report to enter into the discussions which still continue in regard to the existence in the uterus of ganglia and plexuses of nerves, and to their enlargement with the other structures composing this organ, during the period of pregnancy. ¶ Southern Med. and Surg. Journ. (an American publication), June 1846. ** Med. Gaz., July 8, 1842.

site to that at which it entered. On watching the circulation in this spherical coil of transparent vessels, the blood appears as if it were being whirled round in a small spherical cavity at the centre of the gland, and not contained in any vessels.

§ III.—*Respiration.*

12. *Mechanism of Respiration.*—Further and highly valuable information concerning the mechanical part of the process of respiration has been furnished by Mr. Hutchinson, in an excellent paper abounding in matter of high interest and importance communicated to the Medico-Chirurgical Society.* In the mechanism of respiration he distinguishes three principal movements, viz.: The state of extreme expansion or enlargement of the chest; the state of extreme contraction or diminution; and an intermediate condition which belongs to ordinary tranquil respiration. These three divisions necessarily imply a difference in the quantity of air respectively drawn in and thrown out of the lungs. In order therefore to show the relative amount of these differences, he arranges the quantity of air which the chest contains under four principal heads. 1. Residual air. This name he applies to the quantity of air which remains in the lungs after the most complete expiration. 2. Reserve air. This is the quantity of air which remains after an ordinary gentle expiration, and which can be expelled by a complete expiratory effort. 3. Breathing air. This is the portion of air which is employed during ordinary respiration. To this, former experimenters have chiefly directed their attention, and have endeavoured to determine its amount, though with so little success that its quantity stated by different observers varies from 3 to 100 cubic inches. 4. Complemental air. This is applied to the quantity which by a full inspiratory effort can be drawn into the lungs over and above that already taken in by an ordinary inspiration. To these three latter divisions combined Mr. Hutchinson gives the name of "vital capacity," which implies the actual amount of air that can be blown out of the lungs by a complete expiratory effort, after the fullest inspiration; it differs from the "absolute capacity," which means the full quantity of air which the lungs are capable of containing, inclusive of the residual air. In his former paper† Mr. Hutchinson established the important fact, that a close relation exists between the vital capacity of respiration and the height of the person examined; so close and direct indeed, that it may be stated as a general rule, that for every additional inch of height from five to six feet, eight additional cubic inches of air at 60° are given out by a forced expiration. He has been enabled to confirm this statement by further examination, and it is now based on near 2,000 cases; but he cannot, however, offer any explanation of the relation. It does not depend upon an increased depth or capacity of the chest, for the height of the body is chiefly regulated by the length of the legs, and the depth of the chest bears no definite ratio to the stature; neither is the capacity of respiration proportionate to the size or circumference of the chest; and neither, consequently, is there any direct relation between the absolute capacity of the chest and the vital capacity of respiration. So much is the capacity of respiration influenced by height, that a man will breathe several cubic inches less of air when sitting than when standing, and still less when he assumes the recumbent or completely horizontal posture. The vital capacity is influenced also by weight, within certain limitations. Thus at the

* Trans. of, vol. xxix, pp. 137-252. This paper was briefly alluded to in last Report.

† Lancet, July 27, and Aug. 3, 1844; noticed in Mr. Paget's Report for 1843-4.

height of five feet six inches, it is not affected under 161lbs., or 11½ stone; but above this point it diminishes at the rate of 1 cubic inch for every additional pound of weight up to 196lbs. or 14 stone. At other heights the relation is less definite. Age also produces some influence on the capacity: thus from 15 to 35 it progressively increases, but, beyond this latter age to about 65, it decreases at the rate of rather more than one cubic inch per year. The vital capacity of respiration therefore varies according to certain physical circumstances, but the laws of these variations appear to be so constant and definite, that the vital capacity will be found as nearly as possible the same in healthy men of the same physical conformation; and disease may fairly be suspected in a man who cannot by a forced expiration after a full inspiration expel from his lungs as many cubic inches of air (or who cannot exert the same amount of inspiratory force) as the average of those men can who have the same physical make as himself.

13. *Respiratory Movements.*—Having shown that the mere length and breadth of the chest has little influence in determining the capacity of respiration, Mr. Hutchinson proceeds to examine how far it is influenced by the mobility of the walls of the chest, and in the account which he gives he somewhat modifies the present view of the respiratory movements. In ordinary inspiration he admits that the movements are chiefly abdominal, and are produced by the descent of the diaphragm which pushes out the abdominal viscera—the costal movements being extremely slight, not exceeding from two to four tenths of a line. But in deep inspiration the movements are chiefly thoracic: the cavity of the chest being enlarged by the advance of the sternum and the elevation and advance of the ribs, whilst the abdominal walls recede instead of advancing, as is commonly supposed. The diaphragm therefore in this act probably scarcely descends at all, much less is it lowered to the extent generally believed. The mere increase in circumference of the walls of the chest, although it would extend the borders of the diaphragm, would not necessarily lower the arch of this muscle, for probably the most extreme degree of thoracic expansion might be obtained without the centre of the diaphragm being put on the stretch. The average mobility of the walls of an ordinary man's chest, or the range of movement between full inspiration and complete expiration is about three inches. The enlargement of the chest during full inspiration is chiefly in the antero-posterior diameter, the lateral diameter increasing but little. During complete expiration, the abdominal as well as thoracic walls undergo general compression, and the body is decidedly shortened. In the female the extreme respiratory movements are the same as in the male; but in ordinary breathing, as is well known, the movement is chiefly over the sternum. He concludes that the capacity of respiration is exactly in proportion to the range of mobility of the walls of the chest; and that the mobility increases in arithmetical progression with the height of the body.

14. *Action of Intercostal Muscles.*—From some experiments which he performed on the influence exerted by a force acting obliquely on parallel bars, each of which was fixed by one extremity to an axis which allowed the bar freely to rotate, Mr. Hutchinson concludes that the effect of each external intercostal muscle is to elevate its rib and to draw it towards the head of the rib next above, which constitutes the fixed point or axis towards which the muscle contracts. And in order that each external intercostal should perform this act, it is not necessary that the several ribs above it should be first fixed by the contraction of their respective muscles, for the head of each rib forms a fixed point towards which the intercostal below it can contract quite inde-

pendently of any previous action in the intercostals of the ribs above it, and independently also of the first rib being fixed. Owing to this independent power of contraction possessed by each lamella of intercostal muscle, costal respiration can be performed below a fractured rib almost as perfectly as if no injury had been inflicted; this could not be the case if the action of the several intercostals were dependent on the first rib being fixed. The internal intercostals are probably elevators of the ribs as well as the external ones, for although the direction of their fibres is contrary to that of the fibres of the external intercostals, yet the situation of their fixed point, the sternum, is such, that their contraction probably has the effect of elevating the ribs. This action of the intercostals does not explain the fact which Mr. Hutchinson observed, namely, that on inspiration the ribs diverge from each other, whilst in expiration they converge towards each other—their movements somewhat resembling the action of a lady's fan.

From a short notice* of a recent paper by Mr. Sibson, it would seem that this gentleman regards the intercostals as having a compound action—being chiefly inspiratory, but to a small extent expiratory also.

15. *Force of the Respiratory Movements.*—Mr. Hutchinson finds that at the height of five feet seven inches and five feet eight inches the inspiratory power is greatest; a man of about this stature being able by the force of inspiration to elevate a column of three inches of mercury. From this point the inspiratory power gradually decreases as the height increases, so that a man at six feet cannot elevate more than two and a half inches of mercury. The expiratory force is about one third greater than the inspiratory force; but much of this excess is probably due to the elastic recoil of the ribs, and is therefore not muscular. From this reason, and from the fact of the muscles of expiration being used for many other purposes besides those of simple expiration—as in the vocation of the glass-blower, trumpeter, and others—and thus being increased in their natural power, the inspiratory force is a much better test of the strength of the whole muscular system than the expiratory one.

16. *Vesicular Structure of the Lungs.*—M. Mandl† has been enabled to show the vesicular structure of the human lungs by means of fine injections through the bronchial tubes, similar to those so successfully employed by M. Hyrtl and M. Retzius in demonstrating the same structure in the lungs of the horse. In M. Mandl's opinion, however, the minute bronchial tubes terminate in a group of vesicles, all of which open into the cavity of the tube alone, and do not communicate with each other. That the various cells do, however, open freely into each other has been recently shown by the investigations of Mr. Rainey.‡

§ IV.—*Organs of Digestion.*

17. *Structure of the Liver.*—M. Natalis Guillot§ has given a full account of his peculiar views concerning the structure of the liver in man and the various classes of vertebrate animals, portions of which have already from time to time been published. He says that the material of which the structure of the liver is made up is essentially the same in all vertebrate animals, but that the order in which this material is arranged, and the relation which its arrangement bears to the blood-vessels and excretory ducts, varies somewhat in the different classes of animals. In the liver of man this order and

* In the Philosoph. Mag., July 1846. † Archiv d'Anat. Gén. et de Phys., Sept. 1846.
‡ Half-yearly Abstract, Vol. I, p. 258. § In a paper read before the Academy of Sciences in Paris, and published in the Comptes Rendus, 7 Septembre, 1846.

relation is the same as it is in that of all the mammalia. The material of which the substance of the liver is essentially composed consists of irregular somewhat ovoidal particles, which have been latterly described as bile-cells. These particles, however, M. Guillot says, are not hollow, neither do they possess any distinct cell-wall or liquid contents, but are composed entirely of a soft substance intermediate between a liquid and a solid. In his opinion, there is no reason for supposing that they pass through the successive phases of development said to be undergone by cells, or that they originate from a parent-cell, or that they are ever filled with bile, or lastly, that when fully developed, they ever burst and discharge their supposed biliary contents. [The cellular structure of these particles or bile-cells, together with the existence of a nucleus and granular matter in each, is, however, so manifest, that the correctness of M. Guillot's account must be considered to be at least doubtful.] These ultimate particles of the liver are, according to M. Guillot, arranged together in heaps, which he terms "islets" (ilots), each of which is traversed by minute canals or spaces unprovided with membranous walls; these canals form the common commencement of the biliary ducts and of the lymphatic vessels [?] of the liver. Several of these "islets" are arranged together in larger masses which constitute the lobules of Mr. Kiernan and most modern anatomists. The "islets," by the aggregation of a number of which each lobule is thus composed, are separated from each other by a narrow space or canal, somewhat larger than those described as situated within the substance of each "islet," but like these unprovided with membranous walls, the sides of each being formed merely by the particles composing the "islets." These large canals transmit the blood from the ultimate branches, both of the portal vein and hepatic artery which are spread around the lobule, to the commencement of the hepatic vein in the centre of the lobule. Each lobule is circumscribed by a network formed of minute ramification of the portal vein, hepatic artery, hepatic duct, and lymphatic vessels. As soon as they enter the substance of the lobule, the branches of these various vessels cease to possess any membranous walls, being continuous with the above-mentioned canals or spaces which act the part of capillaries. The branches of the blood-vessels are continuous with the canals between the several "islets" composing the lobule; these canals convey the blood to the branch of the hepatic vein which commences in the centre of the lobule, as described by Kiernan and others. The branches of the hepatic ducts and lymphatic vessel are continuous with the narrow canals situate between the particles composing each "islet;" these canals are therefore much more numerous, as well as smaller, than the vascular ones around which they form a dense network, as described by Kiernan, and since confirmed by Weber and others.

18. *Lymphatics of the Liver.*—M. Daniel* has succeeded by means of fine injections in demonstrating to a further extent the arrangement of the lymphatic vessels of the liver. He states that the superficial vessels, when well injected, form an exceedingly dense network covering the entire surface of the gland. Even to their most minute division these vessels possess distinct walls. The lymphatics in the substance of the gland are continuous with the superficial ones, and probably do not in any respect differ from them. The only circumstance, in M. Daniel's opinion, which can favour M. Guillot's view, that the lymphatics of the liver take their origin directly from the capillary network of blood-vessels in the substance of the gland,† is the readiness with which the fluid of injection passes into them from the blood-vessels. But that such a result might occur without any direct communication between the two

* Gazette Méd., 3 Oct. 1846. † See above.

systems of vessels is very probable when the extreme fineness and delicacy of the walls of the capillaries is considered.

19. *Properties of the Bile.*—The experiments which were some time ago performed by Schwann* with the view of determining the question whether the bile, besides being excrementitious, serves any important part in the economy, have been recently repeated with some modifications, and apparently with very different results, by Blondlot,† who is led to conclude that the bile, after leaving the liver, is of of no further use in the process of digestion, being essentially and entirely an excrementitious fluid. In the first of his experiments, Blondlot first established in a dog an external fistulous opening into the gall-bladder, and then tied the ductus choledochus in two places, dividing the tube between the ligatures. The animal appeared distressed at first, but recovered in a few hours, and drank some water, though it would not take food for two days after. The bile continued to flow from the external opening, and was constantly licked off by the animal, who seemed determined not to lose a drop. On the fifteenth day the external wound had cicatrized, with the exception of the small aperture through which the bile flowed; the animal was then muzzled to prevent his licking, whereupon the fæces became discoloured and hard. By this time the dog had become excessively thin, though he had eaten heartily; but he now began to regain flesh, and at the end of three months from the operation was in perfect health and activity, and continued so. The quantity of bile which continued to flow from the fistulous opening was from 10 to 12 drachms daily. This quantity was manifestly increased when fat, sugar, or other non-azotized substances were swallowed. All efforts with the abdominal muscles, as in voiding the excrements or vomiting, momentarily increased the quantity poured out. None of the resinous principle of the bile could be detected in the fæces. Another animal which was operated on in the same way, and presented the same phenomena, was killed at the end of forty days, when it was found that the ductus choledochus had completely disappeared, a fact which would seem to render it probable that a like obliteration had taken place in the dog first experimented on. From the results of these two experiments, which seem to be the only ones on which the conclusion is based, M. Blondlot deduces that the bile takes no important part in the process of digestion.

20. *Insensibility of Liver to Pain.*—A case has been recently narrated in which it was found necessary to cut off a portion of the liver, which from an accident had been protruded through a wound in the abdomen. The small amount of sensibility possessed by this organ was evinced by the fact, that when its substance was cut through, the man suffered scarcely any pain, though when the surface of the exposed liver was touched he suffered severely.‡

21. *Epithelium of the Intestines.*—M. Küss§ has recently published some remarks on the epithelium of the intestinal mucous membrane. His object is to show that, besides being covered by simple mucus and epithelial cells, the entire mucous membrane of the small intestines is lined by a true tissue in the form of a structureless transparent membrane, which is thinly spread over the villi, in greater thickness in the spaces between them, and still more thickly over the Lieberkühnian follicles. To the free surface of this membrane are attached the cylindrical epithelial cells which are in the greatest abundance upon and around the villi. He observes that this layer is manifestly quite distinct from simple mucus, by which its free surface is smeared, and that by

* See Half-yearly Abstract, Vol. I, p. 255. † Essai sur les Fonctions du Foie et de ses Annexes. Paris, 1846. ‡ Northern Journ. of Med., quoted in the Lancet, April 18, 1846. § Gaz. Méd. de Strasbourg, No, ii, 1846, and Encyclo. des Sciences Méd., Mars 1846.

care it may be separated from the mucous membrane, and be then seen to bear on its internal surface minute depressions and prominences corresponding to the villi and Lieberkühn follicles, to the form of which it has been exactly moulded. Very probably the layer thus described is identical with the kind of intestinal epithelium mentioned by Müller as occasionally met with. This physiologist observes: "In calves and kittens there is no difficulty in detecting a delicate unorganized membrane, which can be easily stripped off from the villi like a glove. It is so very soft and friable, that if the intestine is much washed before it is examined, it will have separated of itself. In oxen it is still more delicate, and is not easily seen; when the intestine is washed it separates from the mucous membrane as a mucous substance in which the form of the villi is only here and there perceptible. It is very different from the solid epithelium of other mucous membranes. It is not solid like an epidermis; on the contrary, although coherent in a membranous form, it is so nearly allied to mucus, that it seems to me to be a secretion intermediate between epithelium and mucus."* To the fact of its being so easily removed on washing the intestines is to be attributed, according to M. Küss, the little notice which has been hitherto taken of this membrane. The office which he ascribes to it is that of producing the intestinal mucus, and so, by the nature of the fluid which it secretes, of performing an important part in the changes which chyme undergoes previous to its absorption as chyle. He contends that none of the other structures found in the intestinal canal can be at all adequate to secrete the large quantity of mucus which is being continually poured out on its free surface. Brunner's glands cannot be supposed to do so, because they are confined exclusively to the upper part of the duodenum; neither can the solitary or agminate bodies, for, beyond their small size and situation, they have nothing in common with glands. [?] The follicles of Lieberkühn have been hitherto regarded as the chief parts concerned in the production of intestinal mucus; but, according to M. Küss, these follicular depressions in the mucous membrane only contribute to the production of mucus by allowing at these parts of an increased thickness of the above-described epithelial membrane.

22. *Intestinal Villi.*—In the paper just noticed, M. Küss makes an observation which is quite opposed to Mr. Goodsir's researches on the mode of absorption performed by the intestinal villi. Mr. Goodsir† was led to believe that, as chyme passes along the small intestines, the villi cast off their covering of epithelium, so that the chyme is brought into actual contact with their exposed surface; and that the process of absorption is carried on by numerous vesicles scattered among the terminal loops of the lacteals situated within each villus. M. Küss however, states, that during the time that the absorption of chyme is going on, the villi remain covered with their epithelial cells, which are the essential agents concerned in the absorption and elimination of the nutritive principles of the chyle. In the body of a man who was suddenly killed after a full meal consisting exclusively of bread and grapes, he found the process of chymification in full activity, and the mucous membrane of the small intestines dotted over with opaque white points. These white points were caused by the accumulation of minute drops of fat in the epithelial cylinders covering the extremities of the villi.‡ It is to the presence of these distended

* Elements of Physiology, Dr. Baly's translation, p. 287. † See Report on Anat. and Physiol. in Vol. I, p. 253, of Half-yearly Abstract. ‡ The presence of abundant quantities of fat in these epithelial cells, in a case where the food taken was shown clearly to consist almost entirely of gluten, albumen, starch, and sugar, with at the most but a small quantity of fatty principles, is an important fact for those engaged in the discussions relative to the formation of fat in the animal economy.

epithelial cells, that the large size of the villi with their swollen extremities, so frequently observed in bodies examined whilst the process of chylification is going on, is, in the opinion of M. Küss, to be attributed. These observations of M. Küss concerning the share taken by the epithelial cells of the villi in the absorption of chyle, and the nature of their contents correspond closely with some recent researches by E. H. Weber, noticed in the last Report.*

§ V.—*Nervous System.*

23. *Functions of the Cerebellum.*—A large portion of a work recently published by Mr. Daniel Noble† is devoted to an examination of the various theories which have been advanced concerning the functions of this portion of the brain. His chief object, in this part of his work, is to prove the correctness of Gall's hypothesis, according to which the cerebellum is the seat of the sexual propensities; and to show the incorrectness of the modern view, which attributes to the cerebellum, as its principal, if not only, faculty, the power of regulating the movements of the muscular system, and of combining the action of several muscles, in order to the attainment of a definite object—such as is observed in the acts of progression, of climbing, and other such movements. The various arguments are cleverly stated; and, although they by no means satisfactorily demonstrate the correctness of the view advocated by the author, yet the conclusions which must be drawn from this and all other works treating of the cerebellum, whether containing details of experiments or records of cases, serve but to show how imperfectly the functions of this portion of the nervous system are yet understood, and how much obscurity still hangs over a subject which, considered anatomically, seems to present peculiar facilities for being studied.‡

The writer has recently had the opportunity of observing a case which, to some extent, confirms the truth of the above remarks. It was one of those singular instances of blindness occurring in connexion with, and apparently in consequence of, disease affecting the cerebellum. The loss of vision was complete, and occurred three days before death, having been preceded by occasional squinting and distortion of the eyes. The intellect was unaffected. Two abscesses were found in the substance of the right lobe of the cerebellum; the one encysted, and containing about half an ounce of pus; the other, diffused and smaller. Another circumstance was noticed in this case, which has been several times observed in affections of the cerebellum, and this was the frequent occurrence of vomiting, apparently unconnected with any disorder of the stomach itself to account for it. Beyond general weakness, and a slight paralysis of the left side of the face, no derangement of the muscular system was observed.

Dr. Greene§ has also recorded a case of affection of the cerebellum, in which constant vomiting was present during the last few days of life. A small tuberculous mass was found at the outer margin of the right lobe of the cerebellum.

Evidence in favour of the view that the cerebellum is the organ endowed with the function of regulating and combining the actions of muscles, is afforded by the particulars of a case detailed by M. Goddard,‖ in which a

* Page 289. † The Brain and its Physiology, pp. 450. Churchill, 1846.

‡ The remainder of Mr. Noble's work consists of an ingenious and ably written defence of Gall's system of cerebral physiology and of the general doctrines of phrenology; but since no new facts are recorded, and as the main subject of the book is somewhat foreign to the department of physiology, it need not be further noticed here. § Dublin Journ. of Med., Nov. 1846. ‖ Gaz. Méd., 27 Juin, 1846.

tumour was found pressing on the posterior part of both cerebral hemispheres and on the cerebellum, the latter of which alone seemed to have suffered, being considerably softened. The chief circumstances noticed during life were a difficulty in locomotion, and an inability to regulate the various movements of the body.

24. *Functions of the Spinal Cord.*—Experiments, somewhat similar to those already performed by Engelhardt* and Poletti,† have been recently made by Dr. E. Harless,‡ to show the effects produced on the movements of the limbs, by irritating or dividing the spinal cord of frogs at different parts. The results obtained by Dr. Harless are closely similar to those stated by the other two experimenters, though he has carried his researches farther than they did, and has established several additional points. On irritating the cord immediately below the occiput, or opposite the first vertebra, no movements of any kind were excited in the limbs; but on irritating or dividing it opposite the second vertebra, the lower limbs were invariably flexed. On cutting off successive portions of the cord from above downwards (removing the vertebræ one after the other, so as not to expose the whole cord at once), flexion of the lower limbs continued, though with gradually diminishing force, till the division came to a point opposite the fifth vertebra, when it ceased; a tremulous movement of the muscles being the only effect produced. Division of the cord below the fifth vertebra caused tetanic extension of the lower limbs, though in a less marked degree than that of the previous flexion; and the extension gradually diminished in intensity as more and more of the cord was removed. On inverting the order of the experiment, and dividing the cord from below upwards (having first decapitated the frog, and cut through the cord, with the vertebra and adjoining soft part at the point where it sends off its nerves to the lower extremities), extension of the upper limbs was induced, and continued, though with progressive diminution, until the division arrived opposite the fourth vertebra, when it ceased; above this point flexion was produced. The conclusions from these experiments would seem to be, that the upper part of the spinal cord generates the nervous force for the flexor muscles of the limbs, and the lower part generates force for the extensors; that the one force diminishes in intensity downwards, and the other upwards; that the flexors of the lower limbs continue to receive their nervous force from a point as low as the fifth vertebra, whilst those of the upper do not receive them below the fourth; and, lastly, that the extensors of the lower limbs begin to receive their force at the fifth vertebra, where that for their flexors has ceased, whilst the extensors of the upper limbs begin to receive theirs at the fourth, where the force for *their* flexors has ceased. As at the upper part of the cord, opposite the first vertebra, no movements of the limbs ensue on irritation of the cord, so also there is a point at the lower part of the cord where no movements are produced by irritation, and this is opposite the sacrum and os coccygis.

In another set of experiments, Dr. Harless observed that, although irritation of the upper part of the spinal cord and of the sacral plexus, in a decapitated frog, produced flexion of the lower limbs, yet, when the upper part of the cord was removed, irritation of the sacral plexus no longer induced flexion, but tetanic extension of these limbs; and the same thing was observed when the plexus was separated completely from the cord, and then irritated; the lower limbs being invariably extended, never flexed. These, and other experiments of the same nature, would seem to show that the flexor nerves (so to speak) entering into the composition of the sacral plexus (and possibly the

* Müller's Archiv, 1840. † Il Filiatre sebezio, Dec. 1843; noticed by Mr. Paget, in his Report for 1843-4, p. 50.

‡ Müller's Archiv, Heft i, 1846, pp. 74-95.

same might apply to other nerves and plexuses), lose the power of transmitting nervous influence to their muscles, when their connexion with the upper part of the spinal cord is broken, whilst the extensor nerves retain their power, whether their connexion with the corresponding part of the cord is maintained or not.

A further set of experiments were instituted for the purpose of applying the results of the former ones to the illustration of some of the reflex phenomena of the spinal cord. Thus he found (as did Engelhardt) that on cutting through the cord, on a level with the fifth vertebra, where neither flexion nor extension of the limbs is produced on irritation, yet which is above the point of departure of the nerves for the lower extremities, no reflex movements could be afterwards excited in the lower limbs. He also found that on cutting off successive portions of the cord from above downwards, the power to produce reflex movements in the lower limbs gradually diminished, one group of muscles after another losing this property, until the division was carried to a level with the sixth vertebra, when the power was completely lost. Division of the anterior gray and white substance of the cord, opposite the sixth vertebra, destroyed the reflex power in the lower limbs; but after division of the posterior portion of the cord at this point, the reflex power remained as active as before. After strong irritation of the cord below the seventh vertebra, and when the spasmodic extension of the limbs consequent thereon had ceased, no reflex movements of the lower extremities could be excited. Although after dividing the cord, the vertebræ and all the soft parts opposite the sixth vertebra, in a decapitated frog, no reflex movements could be produced in the lower extremities, yet they remained quite perfect in the upper ones; and when the cord was sliced off in successive portions from this point upwards, it was observed that so long as the irritation of the section caused *extension* of the upper limbs (which it would do until it reached the level of the fourth vertebra), reflex movements could be excited in those limbs, but that when cutting across the cord produced *flexion* of the limbs, reflex movements could be excited not only in the upper extremities themselves, but also in all parts of the upper half of the body. The principal conclusion at which Dr. Harless arrives from the above results is, that inasmuch as the reflex movements of the lower extremities are lost when the spinal cord is cut through opposite the fifth vertebra, and those of the upper are lost when the cord is cut through opposite the third, therefore the reflex function of the cord must be limited to the space between these two vertebræ.

One curious circumstance which he noticed is, that the reflex movements which take place in the lower limbs are chiefly those of flexion; whilst those in the upper are chiefly movements of extension. For example, on irritating the fore foot of a decapitated frog, the animal invariably endeavours to remove the irritant with its fore limb extended, and if the limb is flexed at the time of the irritation, it becomes at once extended. If, however, the foot of one of the lower extremities be irritated, the limb is at once drawn towards the abdomen, and the leg flexed upon the thigh. By this means reflex movements may be distinguished from voluntary ones; for with the latter a frog, if irritated, would endeavour to escape by springing, and in so doing would stretch his hind legs; but if the movements are reflex, he cannot escape, because the effect of such movements is to flex the hind legs. The same thing is witnessed in man. If the sole of the foot of a sleeping person be tickled, the foot is involuntarily flexed; whereas, if the nose or ear be tickled, a movement of extension is made in the upper extremities.

The occurrence of reflex movements in the muscles of the head, when its connexion with the spinal cord had been separated by decapitation, the brain

being left entire, was frequently witnessed by him in the frog, but not in animals higher than the amphibia. On approximating a foreign substance suddenly to the eye, the lids would close. This would seem to show that the encephalon possesses a source of reflex function quite independent of that in the spinal cord. Professor Meyer,* of Bonn, has recently stated that reflex movements of all parts of the body may be excited even after entire removal of the spinal cord; and this not only in amphibia, but in the higher orders of animals—such as mammalia. He says that young hedgehogs, just after birth, show this best. On removing the spinal cord of these animals, and irritating the surface of any limb, distinct reflex movements of it will take place.†

One general conclusion which results from the above experiments of Dr. Harless is, that the spinal cord must be something more than a mere collection of nerve-fibres, on their way to and from the brain; or than a single nervous centre; for they show clearly that different portions of the cord preside over different functions, and it would seem most probable, therefore, that the spinal cord consists of several parts endowed with pecular properties, just as is the case with the brain, although unlike this latter the cord does not offer any marked anatomical division into parts. This view of the mixed character of the spinal cord, and of the presidence of special parts over special functions, has received much evidence in its favour of late. Thus, as was mentioned in last Report,‡ Volkmann has shown that the movements of each pair of the lymphatic hearts of frogs depend upon nervous influence received from a certain small portion of the cord, and that destruction of this at once arrests these movements; whilst destruction of all other parts, so long as this is left uninjured, has no influence on them. And something of the same kind has also been observed by Budge §

In connexion with the above may be mentioned the results obtained by Volkmann,‖ from weighing and measuring different parts of a horse's spinal cord. The weight of four portions of equal lengths taken from below the second, the eighth, the nineteenth, and the thirtieth pair of nerves, were, in the above order, 219, 293, 163, and 281 grains. The areas of the transverse section of the gray matter in these portions were (in the same order) 13, 25, 11, and 25 square lines; and those of the white matter 109, 142, 89, and 121 square lines. The quantity of white (as also of gray) matter, therefore, is absolutely less at the cervical than at the lowest part of the lumbar portion; so that it is almost impossible that all the nerve-fibres which enter the cord can pass up to the brain, even though it be admitted that these fibres become smaller as they pass into the cord. The probability, therefore, is that many (at least) of the nerve-fibres terminate in, or very near, these portions of the cord into which they penetrate.

25. *Relative Weight of the Brain and its several Parts.*—Dr. T. B. Peacock¶ has recently published some tables containing the weights of several organs of the body. Among these there are 105 cases in which the encephalon was weighed, and the value of the results of these is enhanced by comparing them with the tables formerly published by Dr. I. Reid.** The following are some

* Froriep's N. Notizen, No. 832, June 1846. † In an able review of Dr. Marshall Hall's 'New Memoir on the Nervous System' (Lancet, Aug. 8, 15, 29, 1846), is contained a fair and eleverly-written outline of the chief labours of this eminent physiologist on the functions of the spinal cord. ‡ Half-yearly Abstract, Vol. III, p. 259. § Oest. Medic. Wochensch., 10 Jan. 1846. ‖ Wagner's Handworterbueh, art. Nervenphys., quoted in Mr. Paget's last Report, Brit. and For. Med. Rev., July 1846. ¶ Monthly Journ. of Med. Science, Aug. and Sept. 1846. ** Lib. cit., April 1843.

of the general conclusions which Dr. Peacock draws from his own observations and from those of Dr. Reid—the whole number of cases amounting to 350.

1st. The weight of the whole brain, in the adult male, is, on the average, 50 oz. 3·25 drs.,* or about 3 lb. 2 oz., and exceeds that in the adult female by rather more than 5 oz., the latter weighing, on an average, 44 oz. 14·3 drs. Of 131 male brains weighed, the heaviest was 63½ oz., and the lightest 34. Of 74 female brains, the extremes in weight were 54, and 36 oz. These results correspond very closely with those obtained by Dr. Reid, and do not differ greatly from those of Sir William Hamilton and others on the same subject.

2d. The brain appears ordinarily to attain its full weight at from the twentieth to the twenty-fifth year. Throughout the middle period of life this weight shows little variation; but in advanced age a very marked diminution occurs.

3d. So far as data have been obtained, the excess of weight of the male brain over that of the female is observed as early as the commencement of the second year, and continues to prevail through life.

4th. The average weight of the cerebrum, in adult males, is about 44 oz.; in adult females, about 39, or about 5 ounces less than in males. The average weight of the cerebellum, including the pons varolii and medulla oblongata is, in adult males, 6 oz. and 4 drs.; in adult females, 5 oz. and 10 drs.; showing a difference of near 10 drs. The cerebellum alone, calculated from Professor Reid's observations, averages, in the adult male, 5 oz. 2·6 drs.; and in the female, 4 oz. 12·4 drs.—the difference being 6·2 drs. It seems probable that the cerebellum, with the pons and medulla oblongata, arrive at their full development somewhat earlier than the cerebral hemispheres do, though not so early as at the seventh year, as supposed by Sir William Hamilton.

5th. The several parts of the male brain, as well as the whole, are heavier than the corresponding parts in the female.

6th. The relative proportion of the encephalon to the whole body undergoes a gradual decrease from infancy to adult age, and averages, in males at from twenty-five to fifty-five years of age, 1 : 37·2; in females, during adult age, the average is 1 : 35·5.

7th. The proportion which in the adult the cerebellum with the pons varolii and medulla oblongata bears to the whole encephalon is 1:7·8, and is nearly the same in the two sexes, being as 1:8·057 in the male, and 1:7·87 in the female. The ratio of the weight of the cerebellum alone to that of the whole encephalon is, in the male, between twenty-five and fifty-five years of age, 1 : 9·58; and in the female, 1 : 9·34—showing a somewhat higher ratio therefore for the latter; which agrees with the observations of Dr. Reid and Sir William Hamilton.

26. *A New Ganglion.*—Mr. Wharton Jones† has discovered the existence of a minute nervous ganglion, about 1-60th of an inch in diameter, connected by a short pedicle to the largest of the ciliary nerves, in the dog. It is situated at a point nearer to the entrance of the nerve into the eyeball than its origin from the lenticular ganglion. This new ganglion is made up of a small collection of nerve-corpuscles, from among which a few nervous fibrils proceed, and, being collected into a fasciculus, constitute the pedicle by which the body is joined to the ciliary nerve. The discovery affords most satisfactory proof that all which is requisite to constitute a ganglion is a mass of ganglionic corpuscles, and nerve-fibrils proceeding from it. He proposes to name this new body the ganglion cœcum ciliare. In the cat, the only other animal in which

* The weight employed was avoirdupois. † Med. Gaz. Nov. 13, 1846.

Mr. Jones has looked for the ganglion, he found, at the corresponding part of the same ciliary nerve, a small ganglionic mass; which, however, was not connected by a pedicle to the nerve, as in the dog, but closely applied to its surface.

27. *Central Termination of Nerve-fibres.*—In an encephalous fœtus, whose cerebro-spinal axis was truncated at the medulla oblongata, recently examined by Mr. Paget,* all the fibres of the loose hanging ends of the fourth and fifth nerves appeared forming loops, exactly as in the cases described by Dr. Lonsdale.†

28. *Animal Electricity.*—Some further researches on animal electricity have been published by M. Matteucci.‡ One of the results which he considers to have clearly demonstrated is. that the electric organ in fish is composed of a large number of elementary parts, each one of which is endowed with the faculty of developing electricity, under the influence of the nervous filament supplying it: not that he regards the nervous and electric powers as at all identical, but merely that the generation of the latter is under the influence of the former, just as any secretion is influenced by the nerves supplying the eliminating organ. The smallest portion of the electric organ of the torpedo gives a discharge each time the nervous filament supplying it is irritated in an experiment. Matteucci has also found that the gymnotus (and probably all other electric fish) can, at pleasure, discharge electricity, either from the whole, or from but part of its organ; clearly showing that every part of the apparatus is under the influence of its will.

§ VI.—*Organs of the Special Senses.*

29. *Relation of the transparent Media of the Eye to non-luminous Rays.*—Several very ingenious experiments have been performed by M. Ernst Brücke,§ to determine whether the chemical and calorific rays of light are transmitted through the transparent media of the eye as well as the luminous ones. To determine this with regard to the chemical rays, he took advantage of the property which these rays have of changing the colour obtained from guaiacum wood, first to a bright green, and then to a deep blueish-green tint. Having coloured a small porcelain plate with tincture of guaiacum, and dried it in the dark, he allowed light to fall on it, after passing through the fresh lens of an ox's eye. The result was that, instead of being deeply coloured, as it would have been by ordinary diffused light, it scarcely underwent any change. The experiment was then tried with the cornea as the transparent medium, then with the vitreous humour, and lastly, with all the three media together. And the general results which he obtained were that the lens, instead of allowing the chemical rays to pass through it, absorbs them very largely; that the cornea and the vitreous humour absorb them also, though in a less degree; and that with the three media together, the absorption is almost complete.

To determine the same point in regard to the calorific rays, he made use of a thermo-electric apparatus, and on allowing light to fall on this, through the transparent media of the eye, he observed that its needle underwent no change. The results of both sets of experiments would seem to show that both the chemical and the calorific rays of light are arrested in their course through

* Report on Anat. and Phys., July 1846, p. 45. † Edinb. Med. and Surg. Journ., No. 157. ‡ In a letter to M. Dumas, Gaz. Méd., 22 Août 1846. Another communication has also been made by the same physiologist to the Royal Society. § Müller's Archiv, Heft ii and iii, 1845, pp. 262-280; quoted also in Archives d'Anat. Gén. et Physiol., Juillet 1846.

the eye, and are therefore not perceived by the retina, the luminous rays alone reaching and impressing this structure.

30. *Retina.*—The following account of the structure of the retina is taken from M. Pagct's last Rcport.* " Pacini has described the retina as consisting of five layers. The first, or most internal, is formed of the expansion of the white double contoured (?) fibres of the optic nerve, lying close together in a transparent layer. The second is a single layer of nucleated and nucleolated transparent corpuscles, with simple ganglion-globules, which he calls nerve-cells. The third, of a reddish-yellow colour, consists of gray nerve-fibres, arranged in rays, which terminate in the cells of the second layer. The fourth is composed of several layers of corpuscles, identical with those described by Ehrenberg in the cortical substance of the brain, and in the parts of the nervous system, and called by Pacini, from their nuclear characters, nuclear nerve-corpuscles. The fifth layer is formed by the little cylinders of the membrane of Jacob [the staff-shaped bodies of others]. Of these layers, the first, fourth, and fifth cease at the ciliary ligament; but the second and third, as if forming together a true ganglionic system, appear to be continued over the ciliary processes and iris."†

31. *Ear, Movement of small Bones of.*—In an account of the movements performed by the small bones of the ear, and their utility to the sense of hearing, M. E. Weber‡ offers an explanation of the rounded appearance presented by the external surface of the membranes of the fenestra rotunda, when the membrana tympani and the stapes are pushed inwards, after death; and of its concave appearance when the membrana tympani and stapes are pushed outwards. He observes that the articulation between the head of the malleus and the body of the incus is such that the former bone cannot be moved alone by the membrana tympani, but that both move together as one bone. He shows that the axis of this movement is in a line drawn from the slender process of the malleus to the lesser process of the incus; the bones turn on these two processes adherent to the membrana tympani as on a pivot. It thus happens that if the membrana tympani be pushed inwards, the stapes is carried within the fenestra ovalis by the bony process of the incus; if, on the contrary, the membrana tympani be pushed outwards, then the stapes is carried out from the fenestra ovalis. The stapes could not exercise these movements completely if the cavity of the labyrinth was bounded by firm and inflexible walls, for the fluid within it is almost incompressible. The utility, therefore, of the membrane of the fenestra rotunda to the movement of the stapes is readily perceived. The fluid which fills the vestibule communicates with that in the cochlea, particularly with that of the scala vestibuli, which again freely communicates with that of the scala tympani; therefore when the membrane of the fenestra ovalis is pushed inwards towards the vestibule, the membrane of the fenestra rotunda will be pushed outwards. Thus the movements of the membrana tympani produce indirectly the flux and reflux of the fluid of the labyrinth from the fenestra ovalis to the fenestra rotunda, by percussion, and by the yielding of the lamina spiralis of the cochlea.

§ VII. — *Generation and Development.*

33. *Ovum of Mammalia, and the several changes which it undergoes.*—Bischoff has recently published a new work containing the results of his researches on the development of the ovum in the bitch.‡ The chief con-

* Brit. and For. Med. Rev., July 1846. † Ann. Univers. di Med., Luglio, 1845.
‡ Archives d'Anat. Gén. et de Physiol., Jan. 1846, p. 16. ‡ Entwicklungsgeschichte des Hunde-Eies, 1845.

clusions at which he has arrived may, on account of their relation to the development of the mammiferous ovum generally, be briefly stated here. Much of the matter which they contain, however, has been already made known by the author in his previous works, as well as by the researches of others, and may be found fully discussed in the elaborate report on the 'Ovum of Man and the Mammifera,' by Mr. Wharton Jones.* 1. The unimpregnated ovum of the bitch whilst in the ovary, consists, like that of all mammalia, and indeed of all other animals, of a vitellary membrane, termed zona pellucida,† of a vitellus or yelk, of a germinal vesicle, and a germinal spot. The average size of the ovum is 1-15 of a line; that of the germinal vesicle 1-60, and that of the germinal spot 1-240 of a line. Within the ovary, the ovum is imbedded in a layer of cells which, in the form of a membrane (membrana granulosa), lines the internal surface of the Graafian follicle. At the point of this membrane where the ovum is situated, the cells are accumulated in larger quantity than elsewhere, and adhere to the vitellary membrane of the ovum, constituting the so-called *discus proligerus*. 2. The ova in the bitch (as probably in most other mammalia) arrive at their maturity in the ovary at certain periodic times, corresponding with the periods of heat in the same animal. As circumstances denoting the occurrence of this state of full maturity of an ovum may be regarded,—the swollen state of the Graafian follicle, the larger size and fuller appearance of the ovum itself, the elongation of the cells of the discus proligerus into the state of fine fibres, and lastly, the disappearance of the germinal vesicle. The latter event indeed sometimes does not occur until the ovum has escaped into the fallopian tube. With regard to the germinal spot at this time, nothing certain can be said. 3. When an ovum is fully matured, it escapes from the ovary, and passes into the fallopian tube, whether sexual intercourse has taken place or not. If copulation does not now occur, or if access of the seminal fluid to the ovum is entirely prevented, the ovum dies. Inasmuch, however, as the sexual desire is especially strong at this period, copulation and consequent impregnation are usually effected. Even if the ovum has not left the ovary at the time of coition, it may still be impregnated by the seminal fluid passing up the fallopian tube to the ovary; or it may, at a later period, meet this fluid on its way. There is plenty of time for this to happen, for after leaving the ovary the ovum is usually from six to eight days in passing along the fallopian tube to the uterus, during any part of which period it may be impregnated on coming into contact with the seminal fluid. When once arrived at the uterus, however, it is no longer capable of being fecundated, and by the time it has advanced to within a few lines of this its destination, the bitch will no longer allow itself to be lined. 4. The number of ova which at a single period of heat escapes from the ovary varies somewhat. They almost all escape at about the same time, there never being an interval of a day between the departure of any two; they are all

* Brit. and For. Med. Rev., vol. xvi, 1843. † In regard to the structure of the zona pellucida surrounding the unimpregnated ovum, Bischoff still agrees with Mr. Wharton Jones in considering it to be formed of a homogeneous transparent membrane, without vessels, fibres, or cells, and to correspond in all respects to the vitellary membrane of the bird's egg. The thickness, firmness, and elasticity of this membrane, as well as the fact that the ova of no other class of animals in their primary state are provided with albumen, are all opposed to the truth of the theory held by Krause and others, that this zona pellucida is composed of albumen, either alone or inclosed in a membrane. Neither is there any proof of the existence of any other membrane within this zone which could correspond to the proper vitellary membrane, and the probability is, that as Coste (last Report, p. 296) and others believe, the granules composing the vitellus are held together either simply by their own cohesive force, or by the help of some clear viscid substance.

therefore found accumulated together at the same part of the fallopian tube, and present nearly the same degree of development. The several Graafian follicles which are distended at the time of heat do not all discharge their ova; some retain their ova, which eventually break up and disappear. 5. Previous to the discharge of the ovum from the fully matured Graafian follicle, there begins to grow from the internal surface of this follicle a peculiar substance, under the form of granulations; and after the follicle has burst, and the ovum escaped, this new growth becomes further developed, so as to form a true corpus luteum. The presence of such a new structure in the ovary must therefore always be regarded as a certain proof of a Graafian follicle having burst, and of its contained ovum or ova (for in some cases a single follicle contains two, or possibly even more ova within it) having escaped; though not as a proof of coition and consequent impregnation having been effected. [This account, as was stated in the first Report,* must be modified in its application to the corpus luteum in the human ovary, in which this new growth in its perfect form probably never occurs, except as a consequence of conception.] 6. In order that fecundation of an ovum may take place, the seminal fluid must come into actual contact with it. After copulation, spermatozoa in a state of active movement may be sometimes found in abundance on the ovary; but whether or not, they are always present in the fallopian tubes, and consequently around the ova, if these have already arrived there. It has never been clearly shown, neither is it probable, that a spermatozoon enters bodily into an ovum.† The action of the semen on the ovum is probably a chemical one; and it appears tolerably certain that (as suggested by Valentin) the fluid part of the seminal secretion is the material by which fecundation is effected, and that the office of the spermatozoa is twofold, first, by their energetic movements to act as carriers of the seminal fluid to its destination at the ovum, and secondly, by the same active movements, to maintain in its integrity the due mixture and composition of the liquor seminis. The spermatozoa therefore probably act towards the liquor seminis a part somewhat similar to that performed by the corpuscles of the blood towards the liquor sanguinis. So soon as the spermatozoa lose their movements or are separated from the seminal fluid, the fecundating power of the latter is lost, The liquor seminis, or its fecundating part, most probably enters the ovum by imbibition through the zona pellucida. 7. During the passage of the ovum along the fallopian tube, the cells of the discus proligerus, which have hitherto surrounded the zona pellucida, gradually and entirely disappear, so that eventually the latter is left quite bare; no deposit of albumen on it takes place, such as is observed to be the case in the rabbit's ovum (as discovered by Mr. Wharton Jones). The ovum itself, as it passes along the fallopian tube, becomes only somewhat larger in size. 8. When arrived towards the lower extremity of the tube, the first certain signs of the development of the ovum take place. These consist in a division of the yelk into smaller and smaller globular masses, which division takes place in geometrical progression with the factor two. These globules into which the entire mass of the yelk is eventually broken up are not cells, but simply agglomerated heaps of the yelk-granules unsurrounded by a membrane, and containing each in its centre a clear unnucleated vesicle, very similar to a fat-

* Half-yearly Abstract, Vol. I, p. 277. † In the present, as in his previous works, Bischoff states (p. 17), that although he has repeatedly and carefully searched for spermatozoa in the interior of ova taken from the bitch as well as from the rabbit, he has never succeeded in finding them, and that he has been equally unsuccessful in his attempts to find the opening or fissures in the zona pellucida through which the spermatozoa might be enabled to enter the ovum, as described by Mr. Martin Barry.

vesicle. The cause of this progressive division of the yelk and the souree of the clear vesicle in the centre of each ultimate globule are points still in obscurity. It is probable, however, that the central vesicle is the cause of this division and subdivision, and that this vesicle itself is derived from the germinal vesicle or its nucleus.* 9. The forees concerned in propelling the seminal fluid along the genital passages towards the ovum are probably threefold, and consist, first, of the impetus furnished by ejaculation, which carries the semen quite into the uterus; secondly, of a contractile movement of the uterus and fallopian tubes, which commences at the vagina, and thence proceeds onwards towards the ovaries;† and thirdly, of the energetic movements of the spermatozoa themselves. The ciliated processes of the epithelium lining, the uterus, and fallopian tubes can have no share in producing this onward movement of the seminal fluid, since their vibrations take place in a direction contrary to that along which the seminal fluid is advancing. 10. The forces concerned in conveying the ovum from the ovary along the fallopian tube to the uterus are probably derived partly from the movements of the vibratile cilia situated along the fallopian tube, and partly from the contraction of the fallopian tube itself. 11. When first arrived in the uterus the ovum has much the same appearanee which it presented when in the fallopian tube, and the division of the vitellus still continues. Shortly, however, the small globular masses into which the vitellus has divided are developed into cells; a delicate membrane forming around eaeh mass, and the clear vesicle in its centre constituting a nucleus. 12. The cells which are thus gradually formed out of the vitelline granules beeome joined together, and as their number increases, and they become pressed and flattened against the internal surface of the zona pellucida, they combine to form a delicate membrane, which lines the internal surface of the zona, and contains in its cavity a clear fluid which the ovum has gradually absorbed, and whereby it has become incrcased in size. The appearance therefore which the interior of the ovum presents in consequence of this new developmcnt is that of a vesicle, and it has been named aeeordingly germ-vesicle, or *vesicula blastodermica.* (keimblase). At one point of the germ-vesicle may be seen a round dark spot, which is called the *area germinativa*‡ (fruchthof); in this spot the development of the embryo commences. On examining the ovum at this period with high magnifying powers, it may be seen that the yelk-granules are arranged in concentric circles around thc vesicle of the eells of the germ-vesicle. In proportion as the cells increasc so the yelk-granules diminish in number, and finally disappear altogether. 13. As the ovum thus increases in size by the absorption of fluid into its interior, the zona pellucida surrounding it bccomcs greatly stretched, so that it loses its double contour, and is eonverted into a finc structureless membrane. But it still continues to act as the only external membrane of the ovum; for evcn in the uterus there is no deposit of albumen around the zona. 14. The ovum therefore, at the commenccment of its stay in the uterus, is composed of two pellucid vesicles inclosed one within the other, and closely joined togcther—the zona pellucida and the germ-vesicle, or vesicula blastodermiea; within the latter is situated the area germinativa, or spot where the formation of the embryo commences. At this time the ovum lies free in the uterus, and gradually makes its way to the spot where it will eventually become fixed. The power which determines the part of the uterus at which the ovum shall settle is

* For Coste's account of the Metamorphoses of the Vitellus, whieh corresponds closely with the above, see last Report, p. 296. † This movement has been hitherto observed only in bitches and rabbits. There is no proof of its existence in the ease of the human female. ‡ These terms are used by Mr. Wharton Jones in his Report

quite unknown; it does not appear to depend on anything in the organization of the uterus itself. Sometimes the ovum when arrivcd at the uterus passes across its eavity, and attaches itself at the side opposite to that at which it had entered. 15. When the ovum has attained the size of from one and a half to two Paris lines, a close examination will find that from the internal surface of the vesicula blastodermica, at the point where the area germinativa is situated, a second delicate cellular layer has formed, so that the vesicula germinativa now consists of two membranes, the external of which is called the *animal* layer, the internal the *vegetative*. They are so designated because at the part of the area germinativa which corresponds to the external layer the organs of animal life are formed in the embryo, whilst at the part adjoining the internal layer the organs of vegetative life are formed. Between these two layers there, probably in a short time, is formed a third, in which the blood-vessels are developed, and which may thereforc be called the *vascular* layer. It is only at a later period, however, that this third layer can be clearly demonstrated. 16. Until the 20th or 21st day post coitu the area germinativa has consisted merely of a dark accumulation of cells, but it now begins to brighten in its centre, and to be divided into two parts, a bright central portion (the *area pellucida*) and a dark circumferential part (the *area opaca*) The earliest trace of the embryo commences in the area pellucida, and consists at first of an elliptical, then of a guitar-shaped heap of cells situated in the animal layer, in the long axis of which heap a bright streak may be observed. In the accumulation of formative matter on either side of this bright streak are formed the walls of the body of the embryo. The portion of this formation immcdiately adjoining the streak are called the *laminæ dorsales*, and the portions external to these, the *laminæ abdominales* or *visceral plates*. The longitudinal streak itself is called the *primitive groove*. The first trace of the embryo therefore consists of two separate halves. 17. In the primitive groove are formed the central parts of the nervous system, namely, the brain and the spinal cord. Neither of thcse two arises from the other, but each has its own separate development. 18. After the formation of the central parts of the nervous system, the heart and vascular system are next developed. Here again also the heart is not formed out of the blood-vessels, neither do the arteries and veins originate from the heart, but each is developed separatcly and independently of the other. Finally, are developcd from the central part of the vegetative layer of the vesicula blastodermica the intestinal system, namely, the intestines, lungs, liver, pancreas, &c. 18. The modc in which these systems and the organs belonging to them are formed in the ovum of the bitch, is exactly similar to that which takes place in other mammalia and in birds. The development of these parts proceeds so rapidly when oncc the first trace of the embryo appears, that after forty-eight hours the three chief systems arc laid down.

33. *Development of the Seminal Filaments.*—From abundant observations on thc mode of development of the spermatozoa or seminal filaments, Kœlliker* is led to the conclusion that in all animals these particles are developed according to one gencral type, which is somewhat modified in different classes. The elementary structure from which these particles originate is a simple nucleated cell. Some of thesc cells possess but one nucleus; others possess two, three, or more. Frequently several of these nucleated cells are inclosed within a large parent-cell. The seminal filaments are formed within the nuclei, each nucleus giving rise but to one filament. They are formed probably by the deposition of some part of thc contents of the nucleus along its walls; this probably grows, and spontaneously assumes the form and size of a seminal

* Bildung der Samenfæden in Blæschen des allgem. Entwickgesetz. 1846.

filament. The several filaments are set free by the solution of the nuclei and parent-cells. Before this happens they are observed, in most animals, to be arranged together in bundles.

34. *Organization of the Seminal Filaments.*—In a report on a recent essay by M. Pouchut, relating to the structure and movements of the spermatozoa of the triton, M. Milne Edwards* states that there is nothing in the anatomical details offered by M. Pouchut which would justify the view that spermatozoa are true animals. The most that can be said of them in this respect is that they are products of the organism which possess for a certain time highly developed vital properties; but they do not possess the power of reproduction, which is an essential character in all animal beings. After repeated but fruitless endeavours to detect the epithelium with which spermatozoa have been said to be provided, M. Edwards comes to the conclusion that there is no good reason for supposing that any such epithelium exists. A similar view concerning the organization of these highly developed particles is also entertained by Bischoff,† who considers that the possession by them of the power of movement is no reason why they should be regarded as entozoa, any more than vibratile cilia are. Kœlliker‡ insists still more strongly on their complete dissimilarity to entozoa. The spermatozoa of the heart were stated by Wagner to be structures possessed of a considerable degree of organization; but Mr. Gulliver,§ who has recently had an opportunity of examining the seminal fluid of one of these animals, finds that the spermatozoa in it are no more highly organized than are the spermatozoa of other mammalia.

35. *Age of Puberty in different Countries.*—Additional tables have been obtained by Mr. Roberton,‖ showing the average ages at which puberty commences among Hindoo women. The information afforded by these tables confirms most clearly the results obtained from the former ones.¶ The cases, to the number of 230, were collected at Bombay. Of this number the mean age at which the catamenia first appeared was 13 years, 5 months, and 24 days. The earliest was 10 years; the latest 23. Of 102 examples, the mean age at which impregnation was first effected was 16 years, 1 month, and 22 days; and the earliest age at which a child was born was 12 years and 6 months. On comparing these results with the ones afforded by the previously published tables, it appears that in 540 Hindoo women, the mean age at which the first menstrual period occurred was 13 years; the age in the same number of English females being 14 years and 10 months. Of this number of observations, 239 were made on females resident at or near Calcutta, and in these the average age of puberty was 12 years and 6 months; the remaining 301 observations were made on residents at Bengal and Bangalore, and the average age of puberty in them was 13 years, 4 months, and 26 days. Of the whole 540 cases, in not more than 29 did the catamenia appear under the age of 11, whilst in as many as 17 of the same number of English females did they appear under this age; so that the distinguishing peculiarity with respect to the period of puberty in Hindoostan, as compared with the same in England, would seem to consist not in the greater frequency of precocious puberty (that is, of puberty under the age of 11) in the former, but in the large proportion of women who reach this epoch of life at the ages of 12 and 13. This effect, as Mr. Roberton has previously shown, is no doubt mainly attributable to the prevalent custom in Hindoostan of marrying children at a very early age, and previous to the development of puberty. This practice of infantile marriage

* Gaz. Méd., Avril 18, 1846. † Lib. cit. p. 14. ‡ Lib. cit. pp. 60-74. § Edin. Med. and Surg. Journ., July 1846. ‖ Ibid. ¶ Lib. cit., Oct. 1845. See also Half-yearly Abstract, Vol. II, p. 320, where the observations of Dr. Guy, Raciborski, and others, on the same subject, are noticed.

has existed for several thousand years, and has probably, in this lapse of time, produced such a change in the system in this respect as will in great measure account for the early occurrence of puberty in Hindoo children, even when removed from the influence of premature sexual excitement, and from the action of the Indian climate. To this practice, which is rendered compulsory by the Hindoo laws, may also be ascribed the large number of instances of puberty occurring at the ages of 12 and 13, while, at the higher ages of 15 and 16, the numbers noted are comparatively small. In the English tables, on the other hand, instead of the numbers being accumulated at particular ages, they are much more evenly spread out in certain proportions through a considerable number of years—from 9 to 21. This effect is obviously due in great measure to the practice, in this country, of marrying at various ages after the development of puberty.

Mr. Roberton* has also procured information from Madeira, showing the average age at which puberty commences at that island, in which the mean annual temperature is about 14° Fah. higher than it is in London. From this information it appears that the mean age of puberty, instead of being earlier at Madeira than in England, as is commonly supposed, is even six or seven months later. At Madeira it is 15 years and 5 months; in England 14 years and 10 months. It is probable, however, that were the data from Madeira more numerous (228 being the total number of cases collected by Mr. Roberton) there would be a closer approximation of the relative periods at which this process commences in the two countries. If, on further examination, it be found that puberty does occur somewhat later in Madeira than in England, the cause may probably be found in the simple and frugal habits of the people, and their comparative freedom from mental excitement. Torpidity of uterine function seems, indeed, common among them, and anæmia is of frequent occurrence. Menstruation is rarely profuse, although it is commonly supposed to be frequently so. The average age at which the catamenia ceased in fourteen authentic instances was 47 years and 7 months.

36. *Delivery.*—Another of those curious cases has been recorded, and with all appearance of truth, in which a negro woman was delivered, at the same birth, of two children, one of which was black, the other white. The contrast in colour, hair, &c., is said to have been very marked.† A case of quartuple birth is also mentioned as having occurred at Bromley. The children, all of which were males, were born alive.‡

37. *Membrana Decidua.*—The account which Dr. Sharpey gave of the formation and structure of the membrana decidua in the uterus of the bitch, and which he inferred might apply to this membrane in the case of the human female, as also of all viviparous animals, has been amply confirmed by Bischoff.§ Having had the opportunity of examining the uterus of a woman supposed to have been impregnated about three weeks before death, he was enabled to demonstrate quite satisfactorily, that, as Dr. Sharpey had suggested, the membrana decidua, in the human female as in the bitch, is merely the ordinary mucous membrane of the uterus, considerably developed, and that it consists essentially of enlarged uterine follicles and their blood-vessels, together with an unusually large quantity of secretion which these follicles have poured out.‖ The internal surface of the uterus presented an appearance quite different to its ordinary one, being finely villous; and this was especially evident on placing it in water, or examining perpendicular sections of it. The surface itself, when

* Edin. Med. and Surg. Journ., Oct. 1846. † Philadelphia Med. Exam.; quoted in the Lancet, May 9, 1846. ‡ Lancet, May 23, 1846; extracted from the 'Times' of May 20. § Müller's Archiv, Heft ii, 1846, p. 111. ‖ For a full account of Dr. Sharpey's investigations, see Müller's Physiology by Baly. 2d edit., vol. ii, p. 1574.

looked upon from above, appeared as if perforated by a number of small apertures, or covered with numerous white points, and these, when examined by the microscope, were found to be the openings of cylindrical glandules. These glandules, or follicles, were from $1\frac{1}{2}$ to 2 Paris lines in length, were held together by a transparent material, and terminated each by a blind extremity, which rested on the fibrous tissue of the uterus. They ran a somewhat wavy course, but never branched or anastomosed. Previous to impregnation it seems to be exceedingly difficult to discover these glands in the mucous membrane of the uterus. Probably they then exist in a very undeveloped state, but immediately on the occurrence of conception increase rapidly, and exude an abundant secretion. Of these glands and their secretion (together with blood-vessels) the membrana decidua and later on the placenta essentially consist. The statement that a membrana decidua exists in the fallopian tube, as well as in the uterus, in cases of fallopian impregnation, Bischoff combats, by observing that so far as has yet been seen, the lining membrane of the fallopian tube contains no glands by which the formation of a structure corresponding to an ordinary membrana decidua could be effected. A similar view to the above, in regard to the nature of the membrana decidua, has been advocated also by M. Courtz,* who considers this structure to be merely a somewhat altered condition of the mucous membrane of the uterus.

A description of the mucous or lining membrane of the uterus, in the unimpregnated state, has been furnished by M. Deschamps.† He states that this membrane, when carefully dissected off, appears as a whitish, very delicate, and friable structure; it is continuous above with the membrane lining the fallopian tubes, and below, at the neck of the uterus, it is united with the mucous membrane of the vagina. He mentions also, that with a lens he has distinctly observed the free surface of the membrane to be finely villous, owing to the number of minute follicular glands with which it is beset; from the orifices of these he observed a viscid fluid to exude on pressure. This fluid, with which the interior of the uterus is moistened, possesses all the ordinary characters of mucus.

38. *Vulvo-Vaginal Gland*.—M. Huguier‡ has given a description of a gland situated at each side of the junction of the vulva to the vagina. It was discovered by Gaspard Bartholin, and was generally described by older anatomists; but of late its existence has been almost forgotten. According to M. Huguier, this gland is about the size and form of an apricot kernel, and is provided with an excretory duct, about seven or eight lines in length, the external aperture of which is situated in the angle between the vulva and the border of the hymen. This gland is small until puberty, when it is developed with the other organs of generation; it becomes turgid during sexual excitement, and secretes a quantity of clear mucus-looking fluid, which it is said to ejaculate with some force. M. Huguier agrees with former anatomists in regarding this gland as closely analogous to Cowper's gland in the male subject, for it is situated at about the same part of the perineum as this latter is, and presents the same anatomical relations and connexions. It is an appendage to the vulvo-vaginal cavity, a part which is analogous to the urethra in the male; it receives the materials for its nutrition and its sensation from the same vascular and nervous sources as does Cowper's gland; it presents also many varieties in form, size, and situation, and it may be absent on one or both sides, as is often the case with Cowper's gland.

* Archives d'Anat. Gén. et de Physiol., Sept. 1846. † Gaz. Méd., Août 15, 29, 1846. In this Essay M. Deschamps gives a brief account of the various views which have been entertained by different writers on the nature and purposes of the membrana decidua. ‡ Gaz. Méd. 4 Avril, 1846.

39. *Development and Functions of Cells.*—In his last report Mr. Paget* expresses strong doubts of the sufficiency of the ordinary theories of cell-development, having been led so to do by recent examinations of tumours and other morbid growths. The structure of such growths seems peculiarly adapted for testing a theory of cell-development; for, as he observes, "they are doubtless obedient to the same general laws of formation as the healthy structures are, and in the unequal and often rapid growth of their several parts, it could hardly happen but that, in many specimens, all the phases would be seen through which their structures pass towards their fully developed state. But in very numerous examinations I have not found a single example in which a cell has appeared to be forming or formed around a pre-existing nucleus; or one in which fibres have appeared to be formed out of nucleated cells; or one in which nucleated cells have appeared to constitute a stage towards any form of higher development. On the contrary, I have found many instances of rapidly growing structures, composed of large collections of fibres, without a nucleated cell among or near them; others with abundant nucleated cells, but scarcely any free nuclei or granules, and nothing like a cell incompletely developed round its nucleus; and again, others (and those of especially rapid growth) with no cells at all, but composed almost entirely of corpuscles, like nuclei or cytoblasts.

From these and other observations, I am disposed to think that the ordinary (and not the exceptional) mode of development of fibres is not through nucleated cells, but from a structureless or dimly granular substance, which is first *marked*, and then broken up into fibres. There is good evidence that the cytoblasts, which are usually or always imbedded in this substance, influence the development of the fibres, and though I cannot tell how they do so, yet it is certainly not by conversion of themselves into fibres; they shrivel and disappear as the fibres increase and become more perfectly formed. I think it will be found that, in morbid growths, the nucleated cell is always a terminal, not a transitional form; for in certain tumours in which the best-formed nucleated cells are formed, e. g. the epithelial tumours and some examples of medullary cancer, there are no higher forms found, not even imperfect fibro-cellular tissue, except in small quantity about the blood-vessels. Corpuscles having the characters of nuclei or cytoblasts (to adopt still the usual names) appear to be the really energetic bodies in the growth and determination of these morbid structures; they are found in some tumours so abundantly, and so unmixed with nucleated cells, that their power of multiplying and assimilating cannot be doubted; and it is in some of these tumours also that, apparently under the influence of the cytoblasts, the most perfect fibro-cellular tissue is ultimately formed. What I have seen also of the development of these cytoblasts leads me to agree with that view of the development of nuclei generally, according to which they are described as formed, not on a pre-existent nucleolus, but out of granules collected in a dark or dim mass, of the proper size and shape, which then clears up by the formation of a membranous wall and transparent fluid-contents with, in some cases, one or more persistent granules holding the position of nuclei."

Several other contributions have been made on the subject of the physiology of cells; among which is a long and interesting paper by Dr. Williams;† one by Reichert;‡ an essay, by Dr. H. Meckel,§ on the glandular apparatus in some of the lower animals; a short paper, by H. C. Jones,‖ on the structure of the salivary glands; and some general remarks on cells, by M. Courtz,¶ in a work

* Brit. and For. Med. Rev., July 1846. † Guy's Hosp. Rep. Vol. iv, New Series, 1846. ‡ Müller's Archiv, Heft ii and iii, 1846. § Lib. cit. Heft i, 1846. ‖ Lond. Med. Gaz., July 10, 1846. ¶ Review in Gaz. Méd. de Paris, 18 Avril, 1846.

on the development of the human ovum. Mr. Jones in his paper considers (as Henle did) that the secreting vesicles of the salivary glands exist originally as closed and independent cells, and that they subsequently coalesce with each other, or open at once into a terminal duct of the gland.

§ VIII.—*Miscellaneous Subjects.*

40. *Kidney, Structure of.*—In a paper read before the Medico-Chirurgical Society, Mr. Toynbee* gives a good general account of the minute anatomy of the kidney. In regard to the mode in which the urinary tubules come into relation with the tuft of vessels at the Malpighian bodies, he offers an account somewhat different to that of other observers. He states that the capsule of the Malpighian body, instead of being what Mr. Bowman described it, an expansion of the urinary tubule, is a distinct globular investment, which envelopes both the urinary tubule and the tuft of vessels, yet is not continuous with either. This capsule is pierced by the artery and vein; the urinary tubule also enters it, but, instead of terminating there, forms a coil and passes out again.† He states, also, that the nerve-filaments which pass into the substance of the kidney terminate by becoming continuous with the parenchyma of the organ.

41. *Kidney, Congenital Absence of.*—Another case in which the left kidney and supra-renal capsule were completely absent, has been recorded by Mr. Busk.‡ The subject, who was a male, aged 27, died of granular disease of the existing kidney. The ureter on the left side was about the size of the vas deferens, was inserted in the usual situation into the bladder, and terminated about six inches from that viscus in a cæcal extremity; its canal was very narrow, but pervious into the bladder. There were also two other congenital deformities: the left hand presented a supernumerary thumb of nearly equal size with the proper one, and the distal phalanx of the fourth toe of the right foot was wanting.

42. *Muscle.*—The fact that a portion of muscular tissue, when irritated by the direct application of a stimulus to it, commences its contraction from the point of irritation, and that the contraction thence extends in a radiated manner from this point to other parts of the fasciculus, has been illustrated in an experiment performed by Dr. Radclyffe Hall.§ On removing the abdominal viscera from a large kitten, bled to unconsciousness, Dr. Hall observed that each time the impulse of the heart struck against the upper surface of the diaphragm, the muscular fibres at the part struck became firmly contracted for the instant, and this contraction then extended through every part of the fasciculus.‖

43. *Lymph, Corpuscles of.*—In his important investigations, which have been already largely quoted from, Mr. Wharton Jones has furnished an account of the corpuscles found in the lymph of mammalia and other animals of the vertebrate series. He has examined this fluid taken from the lymphatic vessels of the orbit in the skate and mackerel, from the posterior lymphatic heart of the frog, from a fowl, and from the thoracic duct of man, and of the

* Medico-Chirurg. Trans., vol. xxix. † Something of the same kind was noticed by Gerlach, as mentioned in a former Report. (Half-yearly Abstract, Vol. II, p. 308.) ‡ Medico-Chirurg. Trans., vol. xxix. 1846. § Edin. Med. and Surg. Journ., Oct. 1846, p. 336. ‖ It is impossible in the brief limits of this Report to give an analysis of Dr. Radclyffe Hall's lengthy paper on the functions of the ganglia, alluded to in the last Report. The concluding part of it is contained in the Edin. Med. and Surg. Journ. for October 1846. The main object in this paper is to show that the nervous ganglia are not motor centres for muscles, but that their function is to preside over organic processes, which are neither nervous nor muscular.

rabbit; and the conclusion which he has arrived at is, that in each of these animals (and, therefore, probably in most others) the corpuscles of the lymph are identical with those of the blood; the only difference consisting in the slight degree of coloration which the coloured nucleated cells have yet attained.* In the lymph both of the mammalia and of the other animals examined, the nucleated corpuscles were more numerous than the granule-cells. And this is the case in the blood of the oviparous vertebrata, but not in that of the mammalia, in which the nucleated ones are comparatively rare. The account Mr. Jones gives of the corpuscles of the lymph in man is of importance, because of the disputes which have prevailed concerning the existence of any coloured corpuscles in the fluid, but which these investigations must now set at rest. The lymph procured from the thoracic duct contained granule-cells, in both the coarsely and finely granular stages;† corpuscles in a state of transition between these and the ones of the next phase; nucleated cells in both the uncoloured and the coloured stage, and fully distended. The coloured ones were especially numerous. The colour generally was slight; but in some few it was deeper than in the red corpuscles of the blood. A few of the corpuscles were oval. So far the corpuscles of the lymph of man are identical with those of the lymph of the lower vertebrata; and they closely resemble those in the blood of the mammalian embryo. Besides these, however, there were a considerable number of free cellæform nuclei (ordinary red corpuscles), both uncoloured, and in different degrees of progressive coloration. Here and there was observed an empty shell of a coloured nucleated cell, with a free cellæform nucleus near it, as if just discharged. The corpuscles in the lymph of the rabbit were in all respects identical with those in man.

44. *Process of Secretion.*—In a very elaborate paper on the glandular apparatus of the lower animals,‡ Meckel mentions a circumstance observed by him, which he considers may offer some explanation of one of the hitherto unsolved problems relating to the process of secretion, namely, the discharge of the secreted fluid solely on the free surface of the secreting membrane, or its passage towards the cavity of the glandular canal, instead of being collected in the interstices of the secreting organ. Having carefully cleaned from all trace of albumen a portion of the lining membrane of the shell from a hen's egg, he tied it over the mouth of a glass cylinder filled with albumen, the internal surface of the membrane being directed inwards. The cylinder was then immersed in water, and, as might be expected, a portion of the water was speedily absorbed into it through the animal membrane; yet none of the albumen escaped. Upon reversing the experiment, by filling the glass cylinder with water, and placing it in a vessel containing albumen, a portion of the albumen was endosmosed, whilst scarcely any water was exosmosed in its stead. The membrane, therefore, appeared to allow the permeation of fluids from without inwards, but not at all, or to a very slight extent, from within outwards. In the opinion of Meckel, the membrane forming the glandular canals of a secreting organ may in some cases be constituted so as, like the lining membrane of the egg-shell, to allow of the passage of fluid through it in one direction, but not in the opposite.

* Mr. Gulliver (Hewson's Works, edited for the Syden. Soc., p. 253) states that the lymph-corpuscles possess no nuclei, and otherwise differ from the pale corpuscles of the blood: though he considers it probable that they may be subsequently developed into the pale corpuscles either in the blood, or in the thoracic duct, or lymphatic vessels. (p. 282). † See account of, p. 339. ‡ Mikrographie einiger Drüsenapparate der niederen Thieren. Müller's Archiv, Heft i. 1846.

V.

REPORT ON THE PROGRESS OF MATERIA MEDICA AND PHARMACY.

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§ 1.—*Inorganic Materia Medica.*

1. *Iodine and Bromine.*—The following process for obtaining iodine and bromine from soda obtained from sea-weed is due to MM. Delaunay, Couturier, and Villedieu. It has been adopted for several years past, but has only recently been published.

2. *Extraction of iodine from kelp soda.*—The mother-waters of this soda having been concentrated to the greatest possible degree, are left in any suitable vessel, in order to allow the salts, which may be separated during its slow crystallization, to deposit; they are afterwards drawn off, and the small quantity of alkaline carbonate, which is always contained in these mother-liquors, is saturated by means of sulphuric acid. In order to be certain that the free alkali of the mother-liquors is saturated, the point of saturation must be slightly exceeded, which is ascertained when, after having sufficiently agitated the mother-liquor to which the sulphuric acid has been added, a strip of litmus paper plunged into it is slightly reddened.

It often happens that the mother-liquors of kelp contain a considerable quantity of hyposulphites which precipitate sulphur, and by the decomposition of which sulphurous acid is disengaged; in this case sulphuric acid is added, by small quantities at a time, until no more sulphur is precipitated. This clarified liquor is put into large vessels, which must not be quite filled, to allow the liquor to be stirred from time to time.

The bottles having been placed upon a table, a current of chlorine gas is directed to the bottom of the liquor they contain. This gas must not be disengaged too rapidly, otherwise a great part of it will be lost by traversing the liquor without being dissolved: attention to this is also necessary in order to ascertain when to stop. It is important that the liquor should be agitated as often as possible to enable it to combine with the chlorine gas which accumulates in the empty part of the bottles.

The chlorine gas, which is mixed with these mother-liquors, acts first upon the bases of the iodides, saturates them, and separates or precipitates the iodine; this latter appears at first in the form of a reddish substance, which thickens the liquor, but it soon forms into brown flakes which fall to the bottom. When the liquor appears no longer to be coloured red, a small quantity

must be poured into a glass, and left for a time to allow the iodine floating therein to settle; after which a few drops of concentrated solution of chlorine are poured into the clarified liquor: the passage of the chlorine must be discontinued as soon as the solution ceases to thicken the mother-liquor, which, on being left in a quiescent state, allows the iodine to settle at the bottom in the form of a thick layer of brilliant brown flakes.

If the iodine is required in large flakes, the supernatant liquor may be decanted off immediately, and washed in a small quantity of cold water; it is then to be put into a retort of glass or porcelain, and sublimed; a long tube of glass, of sufficiently large diameter, being adapted to the neck of the retort. The iodine is volatilized by the heat in the form of violet-coloured vapours, which are first condensed in the neck of the retort, and afterwards in the tube, in the form of small plates or flakes, having a metallic lustre. When the vapours cease to be perceptible, the operation is completed: care must be taken to keep a cloth constantly wetted with cold water upon the whole surface of the tube. In working on a large scale, the products of several operations are united, left to drain, and sublimed as above described.

3. *Extraction of the bromine.*—The mother-liquor having been completely exhausted of iodine, is introduced into a tubular retort until it is half full; powdered peroxide of manganese and concentrated sulphuric acid of commerce are to be added to it, and an apparatus composed of three recipients, which communicate by means of pipes ground with emery, is adapted to the neck of the retort: the distillation is then proceeded with, care being taken not to let it boil too fast. The bromine which is separated by this operation is volatilized and disengaged in the form of gold-coloured vapours, which are partially condensed in the neck of the first receiver in the form of streaks and drops of a reddish-brown liquid, which run down by degrees into the receiver; but as a considerable quantity of water is volatilized at the same time, it is condensed also, and floats upon the bromine, which occupies the lowest part of the liquor. When the coloured vapours cease to be disengaged from the retort, the fire is removed; a fresh quantity of peroxide of manganese and sulphuric acid are then added; the retort is closed, and the fire is again applied. If a sufficient quantity of these substances has been added at first, all the bromine will have been extracted; it then only remains to collect that which is below the liquor condensed in the receiver; this is done by means of a glass funnel furnished with a cock. When the separation is well effected, the end of the funnel is placed in a bottle, the cock is gently opened, and the bromine runs into the bottle; the cock is shut the instant all the bromine has run through and the water is about entering. This water holds a considerable quantity of bromine in solution, which is separated from it by collecting the residuum and saturating it with a sufficient quantity of potash. The product of this saturation is afterwards evaporated to dryness, and the residue is calcined at a dull red heat with a small quantity of coal-dust; it is then dissolved in just a sufficient quantity of water; the solution is filtered and treated in the apparatus with peroxide of manganese and concentrated sulphuric acid, as above described.

The bromine thus obtained is rectified by distillation.*

4. *Report made by the Comité de Rédaction of the 'Journal de Chimie Médicale,' on the Notes and Observations that have been addressed to them on the economical extraction of Iodine from Iodurated Baths.*†

The Société de Chimie Médicale, since it gave notice, in December last, of its intention to award a silver medal to the author of the most simple and eco-

* From the Bullet. de la Soc. d'Encouragement, as inserted in the Lond. Journ. of Arts.

† Journal de Chimie.

nomical process for extracting iodine from iodurated baths, has received twelve series of observations on this important subject.

The different authors have proposed in their notes, either to precipitate the iodine by means of starch, or (and this is the means most generally pointed out) to decompose the iodide of potassium by one or more metallic salts, so as to form an insoluble iodide, or one soluble to a trifling extent, from which the iodine is to be afterwards removed by a new reaction.

In giving an account of the proposed methods, we shall adopt the order in which the memoirs have been published.

1st. M. Labiche's memoir, in which M. Chantrel took a part, was published in December, 1845. This pharmaceutist has proposed to proceed either by the precipitation of iodine, by means of starch or fecula, or by the absorption of the metalloid by means of charcoal, disengaged from its combination by chlorine. He afterwards separates the iodine by treating the iodide of starch with sulphuric acid, and with the assistance of heat, or by calcining the iodated charcoal with potash. This method is scarcely practicable on a large scale.

2d. In the letter forwarded by M. Legrip, this practitioner proposes to precipitate the whole of the iodine of an iodurated bath, by neutral acetate of lead: the result is an iodide of lead only slightly soluble, which he collects by decantation, and decomposes by hot concentrated sulphuric acid, in a glass or earthenware retort, having dried it.

3d. M. Regnault suggests two processes to separate the iodine from Dr. Lugol's iodurated iodide of potassium, and from Dr. Pierquin's bath of protiodide of iron. He reduces these baths to the simple state of iodide of potassium, either by acting on the first by means of potash, and on the second by carbonate of potash; this reaction being completed, he decomposes the iodide of potassium with bichloride of mercury. The mercurial iodide formed being collected, he mixes it with 42 per cent. of its own weight of carbonate of potash, and distils the mixture; he thus obtains, on the one hand, metallic mercury, and on the other, fixed iodide of potassium, which remains at the bottom of the retort. The latter is newly dissolved in water, and afterwards obtained by crystallization.

4th. M. Harley also proposes to decompose the water of iodurated baths by acetate of lead; as to the iodide of lead thus formed, he treats it with a solution of protosulphate of iron, to convert it into an insoluble sulphate of lead, and a soluble protiodide of iron. It is from this iodide, obtained by evaporation, that he extracts the iodine, by acting on it in a retort, by sulphuric acid and peroxide of manganese.

5th. M. Giovanni Righini points out in his memoirs three processes for its extraction the two first consisting in the production of an iodide of lead, which he afterwards decomposes by means of heat and sulphuric acid; and thet hird, the separation of the iodine from an iodurated iodide of iron, obtained by the action of iron filings and sulphuric acid on the water of the bath, and afterwards decomposing the product obtained by bichloride of mercury. In the description of these processes, there are several points which appeared not very reasonable to the commission. Among others, that of mixing the iodine obtained with iron filings, to be afterwards purified by distillation. Independently of the inconvenience of the method pointed out by M. Righini, a great portion of the iodine must remain combined with the iron, in the state of a fixed iodide of iron.

6th. M. Cottereau, jun., proposes to modify the decomposition of iodurated baths by acetate of lead, by acting on the iodide of lead thus formed, by means of heat and a solution of carbonate of potash, or by a solution of sulphate of potash. The iodide of potassium, produced by this reaction, is afterwards

obtained by evaporation, and purified by crystallization. The author dwells upon the fact of sulphate of potash being a commercial article less expensive than the carbonate of the same base.

7th. The communication of M. Giovanni Ruspini, has for its object the employment of acetate of lead and the decomposition of the iodide of lead by sulphuric acid and peroxide of manganese.

8th. The process recommended by M. Bouyson is analogous to the preceding; it differs from it only by the employment of subacetate of lead instead of the neutral acetate.

9th. M. Leudet has applied the combined action of bisulphate of copper and metallic copper on the iodurated iodide of the baths. He thus transforms the whole of the iodine into protiodide of copper, which he afterwards decomposes by hot sulphuric acid and peroxide of manganese.

10th. M. Cottereau, in a note in addition to his first memoir, recommends the subacetate of lead and the decomposition of the iodide of lead by carbonate of potash.

11th. M. Clement has applied the processes of MM. Berzelius and Soubeiran for the extraction of the iodide of the mother waters of kelp potash; he precipitates the iodurated baths by a mixture of protosulphate of iron and bisulphate of copper, and decomposes the iodide of copper obtained by means of carbonate of soda—a low-priced salt. The result of this reaction is a soluble iodide of soda, which he employs in that state for the preparation of a fresh bath by the addition of a sufficient quantity of water. This process appears to be economical, since it dispenses with the necessity of evaporating the liquid containing the iodide, which can be employed several times in the preparation of an iodurated bath.

12th. M. Minard employs acetate of lead to precipitate the iodine from the bath; but he afterwards treats the iodide of lead with caustic potash, and decomposes the product by sulphuric acid with the assistance of heat. The same author proposes to convert the iodide of lead into the iodide of potassium, by dissolving the first in boiling water, and precipitating by a solution of carbonate of potash. All these different methods are founded on the previously published processes of MM. Berzelius, Liebig, and Soubeiran, for extracting iodine from the mother-waters of kelp-potash; they, therefore, offer no originality of character.

5. *Adulteration of iodine.*—Righini has recently described the appearance and chemical characters of a specimen of iodine which he received from a merchant at Milan.

It was hard and compact, and attracted moisture when exposed to the air. It dissolved entirely in alcohol, and left no residue when treated with iron filings and water. On submitting some of it to sublimation, a residue was left which presented the characters of chloride of calcium. Further examination showed that this salt was present to the extent of 25 per cent.* [The best test for the purity of iodine is one contained in the 'Edinburgh Pharmacopœia.' If 13 grains of iodine, 3 of quicklime, and ℥j of water, heated short of ebullition, form a perfect solution of a yellow or brownish colour, the specimen must contain at least 98 per cent. of pure iodine, there being a very little more iodine than is sufficient to combine with the lime and form iodide of calcium and iodate of lime, both of which form colourless solutions.]

6. *Tincture of iodine.*—Guibourt has published a memoir on the changes which this medicine undergoes in keeping. As it contains valuable practical matter, we give it in his own words:

* Journal de Chimie Médicale

" I wish to direct the attention of the Academy to the variations which the alcoholic tincture of iodine presents in its constitution and therapeutic effects, according to the length of time which has elapsed since its preparation.

" I will commence by taking a retrospect of the use of iodine since Coindet proposed it as a remedy for goître. The alcoholic tincture was at that time prescribed in doses of four, six, or eight drops two or three times a day, in some aqueous liquid. But the iodine is precipitated on adding the tincture to water, the solid particles of iodine being held in suspension in the liquid; and these being deposited on the coats of the stomach, caused active irritation, and probably small local ulcerations. Thus it was found that persons attacked with goître, but who in other respects were in good health, after commencing the tincture of iodine, experienced pains in the stomach, loss of appetite, bad digestion, and wasting, which gave rise to the opinion, prevalent at that time, that iodine could not be used for reducing goître, without its producing, at the same time, a general emaciation; that it diminished, in particular, the breasts; and that when prescribed for young females, it retarded the development of those organs designed for them by nature. Coindet, with the view of obviating these objections to the remedy, substituted for the alcoholic tincture a solution of iodine in iodide of potassium, which, giving no precipitation of iodine when added to water, acted as a mild and uniform stimulant to the stomach, and thus improved the digestive functions. Thus from that time, not only have all the objections which were previously urged against the use of iodine ceased to exist, but, on the other hand, it has been found that weak and debilitated patients improved in appetite and in condition, and young females acquired improved colour, increased development of the breasts, and regularity of the natural economy, in proof of the beneficial action of the medicine. I have taken a review of these circumstances, which must be in the recollection of most medical men, in order to establish the great difference which exists between the action of iodine when administered in the solid state, and in the state of perfect solution. I now pass to the examination of the mixture employed by M. Velpeau in the treatment of hydrocele.

" I will first consider the case of tincture of iodine recently prepared, such as that which I present to the Academy, which was made three days ago, according to the directions of the Codex, by dissolving, without heat, one part of iodine in twelve parts of spirit, sp. gr. .848. If this tincture be mixed with twice its weight of water, the iodine will be almost entirely precipitated in the form of black particles, easily separating by repose, and the supernatant liquid will be almost colourless. In what way should this mixture be taken? If the clear and transparent part only be taken, it would probably produce only a slight stimulating effect, due principally to the spirit. If, on the other hand, the liquid be shaken up before taking it, the solid particles of iodine would be deposited on the coats of the intestinal canal, and would produce a degree of irritation that may not be free from danger.

" I will now consider the case of tincture of iodine which has been prepared four or five months. The following is the change which has taken place during this interval of time. One part of the iodine takes hydrogen from the alcohol to form hydriodic acid, which unites with another portion of iodine to form iodureted hydriodic acid, which gives no precipitate with water. On the other hand, the alcohol probably replaces the lost hydrogen by iodine, forming another compound not precipitated by water. It is found, therefore, on mixing this tincture, four or five months old, with twice its weight of water, that there is still a precipitation of iodine, but that the precipitate is three or four times less in quantity than that afforded by the recently

made tincture. The supernatant liquor, in this case, however, will be much more highly coloured than in the other; and it is unquestionable that the effects of the mixture, whether it be given clear or with the precipitate, would be different from those of a similar mixture made with the recently prepared tincture.

"Lastly, if we take tincture of iodine that has been prepared for a year or a year and a half, it will scarcely cause any precipitation with water, and its medicinal effects will be different from those of the tincture in either of the cases previously considered.

"I conclude from these facts, to which I have long had my attention directed, that the alcoholic tincture of iodine is a medicine liable to variations in its composition and in its effects, and that it ought to be replaced by a somewhat similar mixture, which should be made extemporaneously. Such, for example, as the following, in which the whole of the iodine would remain in solution, forming a homogeneous mixture:

℞ Iodine, 5 parts.
Iodide of potassium, 6 parts.
Rectified spirit, 50 parts,
Distilled water, 100 parts.

Triturate the iodine, iodide of potassium, and part of the water in a mortar; then add the spirit, and the remainder of the water." *

7. *Iodide of starch*, proposed by Dr. Buchanan, is a mild preparation. It is directed to be made by rubbing 24 grains of iodine with a little water, and gradually adding ℥j of finely-powdered starch. Dry by a gentle heat, and preserve the powder in a well-stopped bottle. The dose is ℥ss, gradually increased.†

8. *On the determination of the purity of the commercial iodide of potassium.*—M. Berthet has published the following observations on this subject: "The extensive employment of the iodide of potassium in medicine and its very high price have gradually led to its being mixed with several other salts of less value, such as sulphates, chlorides and bromides. The quantity of time consumed in a chemical analysis requiring weighings in order to detect the fraud, leads to its very frequently being passed unnoticed. I have endeavoured to find out a method both quick and accurate for determining the amount of the iodide, and I have been induced to prefer the precise reaction of an alkaline iodate upon this iodide in the presence of an acid. It is known in fact that in this case the two salts are decomposed and the whole of the iodine precipitated.

"I took as starting-point in my experiments the iodate of soda, it being the most soluble of all, and easily obtained of great purity. M. Millon, in his investigation of the iodates, has pointed out this character of great solubility, and has shown that when heated to 284°—300° it lost all the water it contained, and that it was now represented by equal equivalents of acid and base.

"The iodide of potassium was prepared by forming tri-iodate of potash, saturating it with pure carbonate of potash, leaving, however, a slight excess of acid, and then calcining.

"Having obtained the salts, I wished to ascertain within what limits the action took place; for which purpose I weighed off accurately a certain quantity of each, and dissolved them in an undetermined quantity of water. I then took the weight of my bottles empty and full, and obtained thus the total weight of the liquids contained in them. For the experiment I employed any known weight of the solution of iodide, and added to it gradually

* Journ. de Pharm. † Royle's Manual of Materia Med. and Therapeut., 1847, p. 42.

the acid solution of iodate; I noted down the quantity used to complete the operation, and obtained by a simple proportion the real weight of each of the salts. This mode of operating necessarily led to a great accuracy, because always working with different quantities of liquid, I could not be guided by the quantity of the solution of iodate of the preceding experiment, but solely by the identical characters of the reaction, and thus arrive at the true numerical relations.

"When iodate of soda is dissolved in water slightly acidulated with sulphuric acid, and a few drops of the solution are poured into the iodide of potassium, a precipitate is immediately produced, which redissolves on agitation, colouring the liquid; a further addition of iodate produces the same precipitate, which likewise redissolves; the liquid, which becomes more and more coloured by the iodureted iodide formed, nevertheless remains of remarkable transparency; but a moment comes when a drop of iodate gives a slight turbidness, which no longer disappears on agitation, but gradually increases in proportion as solution of iodate is added; an abundant precipitation results, and the liquid becomes blackish to such a degree that it is difficult to perceive whether the iodate has produced any further reaction.

"The iodine, from being in a state of great division, remains for a long time in suspension, which prevents it being seen whether the supernatant liquid still contains any undecomposed iodide. To obviate this I perform the precipitation in a flask, boil for a few minutes, when the whole of the deposited iodine is volatilized; the liquid becomes perfectly colourless, and by a measured addition of some drops of iodate we at last obtain a liquid which no longer becomes coloured; the whole of the iodide having become decomposed, nothing is left but the potash and the soda, combined with the sulphuric acid employed to acidify the iodate.

"There are two periods to be observed in the precipitation: the first is when the liquid, which though coloured is perfectly transparent, becomes suddenly turbid and of a brownish colour; the second when the liquid is no longer coloured by the addition of a drop of iodate.

"Several experiments have shown under what circumstances decomposition ensues in these two periods. I will merely quote a few of the results. To obtain a complete decoloration of the solution of iodide of potassium, I employed 23·87 per cent. of the iodate; according to calculation it would be 228·75 per cent. To produce turbidness in the liquid I required on an average 11·55 per cent.

"These results explain all the phases of the reaction. When the iodate is poured into the iodide, iodine is liberated, which redissolves in the undecomposed iodide, and there is thus formed biniodureted iodide; a moment comes when the iodine can no longer be dissolved, and is precipitated, which renders the liquid turbid; it is found that, in order to attain this point, a little less than 1 equiv. of iodate is required for 10 equivs. of iodide, and that decomposition is nearly half effected. Subsequently, when the precipitation is complete, there is a very simple relation, that is to say, 1 equiv. iodate is required for 5 equivs. iodide. Indeed, the equation is very readily established; the iodic acid parts with its oxygen to the potassium of the iodide, and the iodine of both salts is eliminated:—

$$IO^5, NaO + 5IK + 6SO^3 = SO^3, NaO + 5SO^3\,KO + 6I.$$

None of the numerical results of the reaction experienced any perceptible variation from the presence of sulphates, chlorides, or bromides, even in the proportions of 30 to 40 per cent. Bromide of potassium alone does not yield any precipitate with the solution of iodate, but merely a very faint yellow colour, which is widely different from that of an iodureted iodide.

"It might happen that the iodide of potassium contained sulphurets and hyposulphites; but the least trace of these salts is immediately detected on the addition of the first drop of the solution of iodate of soda to the solution of such an iodide. In this case, instead of a precipitate of iodine, which redissolves immediately, and which is followed by the coloration produced by the iodurettted iodide, a turbid milky-white liquid is obtained, which is produced by an abundant deposit of sulphur.

"In order to facilitate the use of this iodometric process, I have compounded my liquids so that instruments as precise as those described by M. Gay-Lussac for examining sodas and pearlashes, and which are found in every laboratory, may be employed; as, a graduated tube capable of holding 500 cubic centimetres, a pipette of 100 cubic centimetres capacity, an alkalimetric burette divided into cubic demicentimetres, and a small flask with a somewhat narrow neck capable of holding about 200 grms. The normal liquor of iodate of soda is made thus:—

Very pure iodate of soda . . . . 4·780grms.
Pure sulphuric acid . . . . . 15·000 "
Distilled water sufficient to form 1000 grms. of liquid.

50 cubic centimetres of this liquid, or 100 divisions of the alkalimetric burette, completely decompose 100 cubic centimetres of solution of iodide of potassium, made in the proportion of 5 grms. of iodide to 500 cubic centimetres of solution. The pipette therefore exactly holds 1 grm. of pure iodide, and requires for its decomposition 100 divisions of normal liquid. Each division less employed will denote 1 per cent. of foreign matter, and each drop approximatively two thousandths, and a drop is readily appreciated.

"Since each division of the burette decomposes a fixed quantity, that is to say, 1 centigramme of iodide of potassium, it will always be easy, with a given solution of iodide, to ascertain the real quantity of iodide from the number of divisions employed to produce complete decomposition.

"The experiment is made in the following manner: After having weighed off 5 grms. of the iodide to be examined, it is dissolved with great care in the tube so as to have 500 cubic centimetres of liquid; a pipette-full is then taken and poured into a small flask holding about 200 grms. Holding the flask in one hand, the normal liquor with which the burette has been filled is gradually added with the other hand; on the addition of each drop it is requisite to agitate, in order to redissolve the precipitate; when evident turbidness results, the number of divisions employed is read off; and as experiment has shown that at this period the decomposition is about half effected, an equal number of divisions to that employed to produce this turbidness is subsequently added at once; it is slightly agitated, to prevent the iodine, which is now precipitated in quantity, from caking together, and the flask is placed over a small fire or a spirit lamp. After two or three minutes' boiling the iodine is expelled, the liquid is colourless, and the reaction being nearly finished, only one drop of the normal solution is added, which no longer yields any precipitate, but merely a colouring, which very soon disappears on applying heat to the flask; each drop is now added with precaution until there is but a very faint yellow colouring, which proves that the decomposition is complete.

"At this period one drop of the normal liquid leaves the solution perfectly colourless, the whole of the iodide is decomposed, the iodine volatilized, and the flask contains nothing but sulphate of soda and potash plus the drop of iodate last added, and which may be rendered evident by adding a little of the solution of the iodide.

"Several commercial iodides have been analysed by this process, and I soon found a considerable difference in their purity. Some of them, notwithstanding their beautiful external appearance, and the efflorescent cubic form of their crystals, scarcely indicated 90 per cent. of pure iodide; that which appeared to me the purest of all was an iodide in small, transparent, very white laminæ, for which I am indebted to the kindness of M. Quesneville. This iodide indicated 99 per cent., that is to say, it was nearly chemically pure.

"In case merely approximative but quick results are desired, the first period of the reaction may suffice, and the turbidness resulting in the liquid taken as the point of comparison. The experiment may be made in an ordinary glass cylinder, when the tint will be better distinguished than in a flask. A pipette of the solution of the iodide above mentioned, representing 1 grm. of iodide, requires, in order to be rendered turbid, 48 divisions of the burette; each division that it requires less will indicate nearly 2 per cent. of foreign matter, and each drop nearly $\frac{1}{2}$ per cent.

"Where the shade of colour alone is depended on, it is impossible to avoid errors of 1 or 2 per cent., which renders this method less accurate than the first, which will even indicate a thousandth.

"The following short table shows what per-centage each division of the burette employed to produce the turbidness in the liquid is equal to :—

48	divisions	=	100.00	per cent.	iodide.
47	. .		97·91	. .	
46	. .		95·83	. .	
45	. .		93·75	. .	
44	. .		91·66	. .	
43	. .		89·58	. .	
42	. .		87·50	. .	
41	. .		85·41	. .	
40	. .		83·33	. .	
39	. .		81·25	. .	
38	. .		77·16	. .	
37	. .		77·08	. .	
36	. .		75·00*	. .	

9. *Liquor Ammoniæ, an Impurity in.*—Dr. Douglas Maclagan recently found that, on adding nitric acid to a fluid containing an excess of ammonia, the liquid assumed a deep red colour, passing to purple. This was found to be owing to the ammonia containing a considerable amount of the volatile substance called *pyrrol*, discovered by Runge, and a portion of what was probably *naphthaline*.

The following were the experiments to which this impure aqua ammoniæ, which was quite colourless, was subjected:

1st. The addition of an excess of nitric or sulphuric acid caused a rapid red coloration passing into purple.

2d. The ammonia was supersaturated with muriatic acid and a clean shaving of fir wood inserted into the fluid. It speedily became dyed of a rich purple. This is characteristic of pyrrol.

3d. A portion of the ammonia was supersaturated with sulphuric acid and distilled. The distilled liquid had a marked odour of naphthaline, and crystalline-looking particles, apparently of this substance, floated in it. It was tested by muriatic acid and the fir wood, and gave very strongly the colour characteristic of pyrrol. Pyrrol was considered by Runge to be a base, but it distils over even from a large excess of sulphuric acid. Hoffman, in his

* Journ. de Pharm., Sept. 1846.

investigation of aniline, failed to obtain this substance previously discovered by Runge, but Dr. Anderson,* found it in abundance.

4th. The residue of the distillation in the last experiment, which of course contained all the ammonia in combination with the sulphuric acid, was mixed with a small quantity of caustic potash. The smell of *picoline*, the new base recently discovered by Dr. Anderson, was distinctly perecived. More potash was then added, and the fluid distilled, when the ammonia passed over. It was now again tested for pyrrol, but hardly a trace of it could be detected.

It is easy to see how these impurities come to be present in the ammonia. It is well known that most of the ammonia of commerce is derived from the watery liquor of gas-works, from which it is prepared by converting it into sulphate or muriate, and decomposing the salt so obtained by lime. In the preparation of this impure aqua ammoniæ, it is obvious that this process had not been followed. The manufacturer, in order to save the expense incurred by converting it into sulphate or muriate, had contented himself with procuring it by direct distillation, and thus it contained the other volatile ingredients of the gas liquor.

It is hardly necessary to say that such aqua ammoniæ is quite unfitted for chemical or pharmaceutical use. It is sold at a lower price than the ammonia of the same strength as it ordinarily occurs in commerce. That which was the subject of the above experiments was procured from England.

Dr. Maclagan suspected that this impure ammonia might also contain traces of hydrocyanic acid; but none could be detected by the ordinary tests.†

10. *Iron, Preparations of.—Iodide of iron.*—The Messrs. T. and H. Smith‡ now make a solution of iodide of iron in a Florence flask, with ʒvj of pure iron filings, ℥ij ʒij of iodine, and f ℥ivss of cold distilled water. This mixture is boiled till the liquid loses its colour; it is then filtered rapidly into a clean flask, and evaporated at a boiling heat. They obtain the compound either as a crystallized hydrate, or in an amorphous anhydrous form, according to the extent of the evaporation, and inclose it, without the slightest delay, in small well-corked bottles. As all the solid preparations are liable to change, they further recommend powdering their anhydrous iodide as soon as it is taken from the flask, and then instantly to incorporate it with twice its weight of pure refined sugar in powder, and to make it up in mass with honey.

M. Calloud,§ in a memoir on this salt, points out the advantages of preparing it by double decomposition. He shows, by analyses of various specimens, that when the salt is prepared in the direct manner, and its solution evaporated to dryness, there almost always occur flakes of crystallized iodine adhering to a bluish mass, friable and insoluble in water, which is no other than a mixture of reduced iodine and sesquioxiodide of iron.

The following are his observations on the iodide of iron obtained by double decomposition:

By reducing iodide of potassium and sulphate of protoxide of iron to a fine powder, and triturating the mixture of the two salts, we obtain the protiodide of iron.

1 part of sulphate of crystallized protoxide of iron . .	161·52
1 part iodide of potassium	206·94

The double decomposition being produced by the assistance of the water of crystallization of the sulphate of iron, we treat it with alcohol of 85° per

* Trans. Royal Soc. Edin , vol. xvi, p. 2. † Monthly Journ. of Med. Science.
‡ Royle, Op. cit. p. 132. § Journ. de Chimie Méd.

cent., which only dissolves the iodide of iron that is formed. The alcoholic solution has all the characters of the protosalts of iron; and the reaction of the two salts is complete. The sulphate of potash is, in this case, in the condition of the insoluble salts.

The iodide of iron, thus mixed with the sulphate of potash, may be employed therapeutically with undoubted advantage in a dry state.

The following formula may serve for certain pharmaceutical preparations, having iodide of iron for a base:

Crystallized sulphate of iron	3 parts.
Iodide of potassium	4

It is important to choose the sulphate of iron in small, colourless, and translucent crystals, which integrally represent the protoxet, with seven proportions of water. The iodide of potassium ought to be perfectly neutral and pure; the least excess of alkali in the iodide would also be at once shown by the sulphate of iron, which, in this case, is a good test. To be satisfied of the purity of the substances, the mixture of the two salts being dissolved in a certain quantity of water, the latter ought not to be rendered cloudy by the green or yellow oxide of iron, which would indicate the employment of a basic iodide of potassium, or a sulphate of iron, partially peroxidized.

11. *Pills of Protiodide of Iron.*—

	Grains.
Crystallized sulphate of iron	24
Iodide of potassium	32
Gum tragacanth	5
Sugar	15

Syrup of marsh-mallow q.s. for 36 pills.

Each pill contains 3-4ths of a grain of dry iodide of iron, and half that quantity of sulphate of potash.

We obtain a mass that can be easily preserved, by substituting ℈iss of the crumb of bread for the gum and syrup. These pills are to be rolled in lycopodium powder, and placed in a dry place.

The following preparations may replace the usual formulæ:

12. *Tincture of Protiodide of Iron.*—

	Grains.	
Crystallized sulphate of iron	12	
Iodide of potassium	16	
Alcohol at 85° per cent.		℥ss.

We triturate the two salts, as directed above, dissolve the iodide of iron in the alcohol, and filter.

It is then to be placed in a well-stoppered bottle, completely filled with the alcoholic tincture. A small excess of iodide of potassium gives it more stability. Sixteen parts of the tincture contain one part of iodide of iron.

13. *Iodide of Iron Wine.*—

	Grains.	
Sulphate of iron	12	
Iodide of potassium	16	
White wine		℥j

The two salts being pulverized, we add a few drops of wine to the mixture, quickly triturate it, then dissolve it in the rest of the wine, and filter.

One ounce of the wine contains fifteen grains of iodide of iron, besides a little sulphate of potash. It must be placed in a glass-stoppered bottle quite filled. All these preparations of iodide of iron by double decomposition, being easily and quickly prepared, need not be kept ready made.

[One of the best preparations of this salt is the syrup of the Edinburgh Pharmacopœia. This is prepared by boiling 200 grains of dry iodine with 100 of recently cleaned iron wire in f℥vj of distilled water, till only f ℥ij remain. The ebullition must at first be gentle (not to expel iodine vapour), but afterwards brisk; the liquid must be filtered while hot into a matrass containing ℥ivss of powdered white sugar, which must be then dissolved at a gentle heat, and distilled water added to make up six ounces. The sugar prevents the protoxide of iron passing into the state of peroxide. The solution ought to be "nearly colourless, or pale yellowish-green, and without sediment." It ought not to be diluted long before it is taken, and, therefore, the patient should himself make the mixture. Twelve minims, or 15 drops, contain one grain of iodide of iron. It may be prescribed with vegetable astringents and dilute mineral acids.]

14. *Bromide of iron* is prepared in precisely the same way as the iodide, substituting bromine for iodine. Mr. Squire states that a coil of iron wire traversing the whole column of the solution is necessary to preserve it in a neutral and uniform state, and is perfect in its action. It acts as an energetic tonic.*

15. *Liquor oxysulphatis ferri* is a preparation, according to Mr. Tyson, in constant use among the practitioners of Derbyshire, and considered one of the most powerful preparations of iron. It is prepared by rubbing up *ferri sulph.* ℥ij or ℥iij with *acidi nitrici* f℥iij, then gradually adding *aq. destil.* f ℥iss, and filtering. A sulphate of the peroxide is formed. The dose is m. v-xij two or three times a day.

16. *Carbonate of iron.*—In relation to this salt, Dr. Royle† observes that "as the protosalts are more efficient as medicine than the persalts, it has been the practice with many to direct the *mistura ferri composita* to be taken as much as possible when fresh made, or when of a greenish colour. Sugar has long been presented with ferruginous preparations, as in the old *mars saccharatus*, and with the carbonate of iron, the mist. ferri comp., and pil. ferri comp.

Soubeiran states that the idea of presenting the oxidation of the carbonate of iron, and preserving a uniform medicine, first occurred to Dr. Becker, and that it was put into practice by M. Klauer, a pharmacien of Mulhausen, who employed sugar for this purpose, having discovered that it had the power of preventing the protoxide of iron from passing into the state of peroxide, by absorbing more oxygen.

17. The *ferrum carbonicum saccharatum* of Klauer is identical with the *ferri carbonas saccharatum* of the Edinburgh Pharmacopœia, which is prepared by dissolving sulph. ferri ℥iv in aq. dest. Oij, and sodæ. carb. ℥j in aq. Oij. Then the (cold) solutions are mixed, and the precipitate collected on a cloth filter; it must be immediately washed with cold water, and then triturated with ℥ij of finely-powdered pure sugar. The mixture must then be dried at a temperature not much above 120°.

Klauer supposed that a definite compound is formed, consisting of protoxide and sesquioxide of iron, carbonic acid, sugar, and water. He found 80 per cent. of protoxide and 20 of sesquioxide. Fifty grains ought to yield 7·5 cubic inches of gas when decomposed by an acid. This is one of the best forms for a ferruginous preparation. The dose varies from gr. x to ℥jss.

* Royle, op. cit. p. 133. † Op. cit. p. 139.

In addition to the preparations of the carbonates in the British Pharmacopœias, Soubieran (quoted by Royle) describes some others; one of which, the *poudre ferée gaseuse*, is prepared by carefully mixing gr. iij of sulphate of iron with ℥ijss of powdered sugar, adding gr. liv of powdered bicarbonate of soda, and ℥j of coarsely-powdered tartaric acid; these must be added to a bottle of water, which must be immediately corked. The effervescence of the carbonic acid renders this an agreeable preparation.

18. *Vinum ferri*, or steel wine, is omitted in the Pharmacopœias, but an efficient and uniform substitute can at any time be formed by dissolving a portion of potassio-tartrate of iron in sherry wine. It was formerly made by macerating for a month iron-filings in sherry wine, and contained only 16 grains of the peroxide in a pint of wine. Mr. Donovan macerated ℥ij of the rust of iron of the shops, well levigated, with one pint of the best hock, in a mattrass placed in a water-bath of 100° F. for one hour, constantly agitating, and the next day filtered. Or take *tartrate of protoxide of iron*, 1 part, and rub it up with *tartaric acid*, 1 part, in a porcelain or glass mortar, then add of white wine 1000 parts, and filter the solution if necessary. The *tartrate of the protoxide of iron* may itself be made by decomposing an equivalent of protosulphate of iron with an equivalent of neutral tartrate of potash, immediately washing the precipitate with water, collecting it on a strainer, pressing it strongly, and drying over a water-bath.

19. *Ferri ammonio-tartras.—Ammonia-tartrate of iron.*—In the same way that sulphate of alumina, by combining with potash, soda, or ammonia, will form either potash, soda, or ammonia alum, so various double salts may be formed by presenting different bases with iron to the citric and tartaric acids. The ammonio-tartrate of iron is one of these, which has for some time been prepared as a substitute for the tartrate of potash and iron. It is of a dark brown colour, in brilliant scales, or in angular grains, resembling kino; its powder is of a dark brown colour, like iron-rust. It has a mild ferruginous taste; soluble in rather more than its weight of water at 60°; not decomposed by boiling water; insoluble in both alcohol and ether. It is composed of 1 eq. of tartrate of sesquioxide of iron, 1 eq. of tartrate of ammonia, and 4 of water. A formula for preparing it is given by Mr. Procter, jun., in the 'American Journal of Pharmacy,' by decomposing bitartrate of ammonia, with fresh-made hydrated sesquioxide of iron. It is an eligible preparation of iron, and may be given in doses of gr. iij. to gr. viij., in aqueous solutions or in pill, or with some confection.

20. *Ferri citras.—Citrate of iron.*—M. Beral, in 1831, introduced to the notice of the profession several preparations in which iron is combined with citric acid. Of these the citrate or sesquicitrate of iron in a combination of boiling citric acid ℥iv, and distilled water f℥iv, with moist hydrated sesquioxide of iron about ℥viij. When cold, add water so as to make f℥xvj. It is obtained (by drying its solution spread out on glass) in thin and transparent laminæ of a beautiful garnet hue; it has an acid, and not disagreeable styptic taste. It dissolves slowly in cold water, but more readily in boiling water. M. Beral has also proposed a protocitrate of iron, which is white and pulverulent, with a strong chalybeate taste, and also a citrate of the magnetic oxide of iron. But the name citrate of iron is applied to a preparation in which the excess of acid has been counteracted by ammonia, and which thus becomes converted into the following:

21. *Ferri ammonio-citras.—Citrate of ammonia and iron.*—This is prepared by adding ammonia to the citrate of iron, so as to neutralize the excess of acid, and thus produce a double salt; then evaporate to dryness with a gentle heat. It differs sufficiently from the former to require to be designated by a dif-

ferent name, in order to prevent mistakes. It is like the citrate, in shining scales, of the same beautiful garnet colour, but with a milder taste. Readily soluble in cold water, and may be given in doses of v-viij grs. in solution.

The following formula for pills of this salt has been recently published by Beral.

℞ Sugar in powder . . . . . ʒiij
Anhydrous citrate of iron and ammonia . . ʒj.
Mucilage . . . . . a sufficient quantity

Make it into a mass and divide it into three-grain pills. These ought to be silvered.

All these and some other preparations of citric acid and of iron, as citrate of iron with zinc, with soda, with potash, and with magnesia, are prepared with great purity and elegance by Mr. Bullock; the citrate of iron especially, in the form of syrup, wine, and lozenges.

22. *Aqua chalybeata.*—One of the most elegant and agreeable forms which has yet been proposed for the exhibition of iron is an effervescing solution of citrate of iron flavoured with orange-peel, called Aqua Chalybeata, by Messrs. Bewley and Evans, and for which the name of Chalybeate Champagne has been proposed. It consists of a solution of citrate of iron, highly charged with carbonic acid gas and flavoured with orange-peel. It is sent out in six-ounce bottles, which afford on analysis gr. vij$\frac{9}{10}$ of peroxide of iron, corresponding to gr. xiiiss of the citrate of iron. Two ounces or a wineglassful two or three times a day forms a dose which is grateful to the taste, and suitable to the most delicate in constitution, and to children, at the same time that it is effective as a tonic.

23. *Lactate of iron.—Ferri lactas.*—Lactate of the protoxide of iron is a mild chalybeate which is obtained in a greenish-white powder, or in greenish acicular crystals, by the direct action of a dilute solution of lactic acid on iron-filings. When it is dissolved, the iron passes to a higher state of oxidation, and the solution becomes yellow. It may be prescribed in the form of lozenges or of syrup.

24. *Malate of protoxide of iron* is a form of preparation in use in the Prussian Pharmacopœia. It is procured by digesting one part of iron nails or wire, along with four parts of apple juice, for some days, then evaporating the liquid to one half, filtering and concentrating to the consistence of an extract.*

25. *Ferrocyanide of iron* appears to exert no influence on man or animals in health; it has, however, been regarded not only as a simple but as an anti-periodic tonic. It has, accordingly, been given in atonic conditions in general, especially of the intestinal canal; but like indigo, it has been more extolled in epilepsy and chorea; and has been prescribed in intermittent fever, on the recommendation of Dr. Zollickoffer, of Maryland, and others. It has likewise been found of service in facial neuralgia, and in some cases of scrophulosis. Dr. Dunglison has given it in all these cases, but has not been satisfied with its effects. Dr. Zollickoffer considers it to be especially adapted for intermittents and remittents occurring in children, on account of the smallness of the dose required, and its want of taste. It has been used in the form of ointment, (ferri ferrocyanidi, ʒj, ung. cetacei ℥ij,) to ill-conditioned, torpid, and foul ulcers. The dose is five grains three or four times a day, gradually increased.

26. *Ferri phosphas. Phosphate of iron.*—Phosphate of iron, which is peculiar to the United States Pharmacopœia, is formed by the double decomposition of *sulphate of iron*, and *phosphate of soda;* the sulphuric acid of the

* The above observations on the salts of iron have been extracted from Royle, Op. cit.

sulphate of iron lays hold of the soda of the phosphate of soda; and the resulting sulphate of soda remains in solution, whilst the phosphoric acid of the phosphate of soda combines with the protoxide of iron of the sulphate of iron, and forms phosphate of iron, which is precipitated. Phosphate of iron is of a slate colour, and is insoluble in water. It possesses the general virtues of the chalybeates; but like many other of the preparations of iron, does not appear to possess any special virtues to occasion its retention as an officinal preparation. The dose is from gr. v to gr. x. It is, however, but little used. The cause of its admission into the United States Pharmacopœia is stated to have been "the suggestion of Dr. Hewson, of Philadelphia, who found it, after an extensive experience to be a valuable chalybeate." (Wood and Bache).

27. *Mercury.*—Dr. Royle remarks on the *Hydrargyri Nitratis Unguentum* or *Citrine Ointment*, that it "was introduced into the Pharmacopœias as a substitute for one known as Golden Eye Ointment. When properly prepared it is soft, of a bright yellow or lemon colour, and of a strong nitrous odour. It is apt, however, to change, especially if the directions for its preparation are not strictly followed. It is then hard, and becomes brittle and almost pulverulent, and its colour changed to bluish-gray or greenish, or of a mottled appearance, the metal becoming by degrees reduced.

"Difficulty having been experienced in making this ointment, in accordance with the directions of the Pharmacopœia, various suggestions have been made for its improvement, as diminishing the lard to one sixth, using olive oil alone, or substituting almond, rape, and neat's-foot oil, also butter; though many have succeeded in making good ointment, as we ourselves have done when abroad, by following the directions of the L. P. Mr. Alsop (in Pharm. Journ. i, p. 100) clearly pointed out that a due regulation of the heat necessarily generated when large quantities are made is essential, and that a temperature of about 190° is the best for mixing the solution of the nitrate with the melted fatty matter, when a strong effervescence takes place. It is equally necessary to attend to the sp. gr. of the acid, in order that the exact proportions of the College may be employed, and that the quantity must be increased when the sp. gr. is less than 1·5. The stirring usually employed he does not find essential. Mr. Alsop directs attention to the directions given by Dr. Duncan in his Dispensatory of 1794, as they embody these principles, and seem to have been originally proposed by Mr. Duncan, of Edinburgh. The proportions have been adopted by the Edinburgh Pharmacopœia, but the quantities have been corrected by Dr. Christison (Disp. p. 530). It yields ointment of a fine golden colour, and of the requisite softness, if kept from the light. Experiments have also been made in the laboratory of the Pharmaceutical Society (v. P. J. iv, 450), showing that perfectly good ointment is made by attending to the L.P. directions, and that ointment which was old, become hard, discoloured, and pulverulent, was restored to its original appearance by heating it with a little nitric acid. When well made, citrine ointment, according to the explanation given by M. Soubeiran from the experiments of M. Boudet, contains nitrate of the binoxide and some sub-nitrate of the protoxide of mercury, or "turbith nitreux"—less of the latter, and more of the former, as the heat is greater,—with some free nitric acid. On the addition of the mercurial solution, decomposition takes place, binoxide of nitrogen and carbonic acid gas escaping. Some elaidic acid formed combines with oxide of mercury, there is also some elaidine and a small portion of a yellow matter soluble in alcohol."

28. "*Linimentum Hydrargyri Nitratis*, made with Ung. hydr. nitr. ℥iiss,

Cerati simplicis ℥viiss, Olive oil f℥v, is officinal in the Manchester Infirmary, and is no doubt a good substitute for the weak citrine ointment, for which a formula existed in former Pharmacopœias."

29. *Antimony.*—Dr. Mayerhofen has investigated at great length and with many experiments the action of the antimonial preparations on man and animals. As the whole of his essay has not yet reached us, we shall postpone stating his results and conclusions to our next Report.

30. *Arsenic.*—Some excellent remarks on the action of arsenious acid and other antiseptics may be found in Liebig's 'Chemistry and Physics in relation to Physiology and Pathology.'*

31. *Iodide of Arsenic* is an orange-red powder, without taste and smell, easily volatilized. It has been administered with benefit in doses of gr. $\frac{1}{8}$ gradually increasing to gr. $\frac{1}{4}$ in some chronic cutaneous diseases, as lepra and psoriasis.

32. *Solution of hydriodate of Arsenic and Mercury.*—Arsenici et hydrargyri hydriodatis liquor of Mr. Donovan, of Dublin.—Iodo-arseniate of mercury of Soubeiran. Arsenic, mercury, and iodine being in some respects similar to each other in some of their effects, and occasionally prescribed in a solid form, Mr. Donovan was induced to propose the more perfect form of a chemical solution. This is of a yellow colour, with a tinge of green, styptic in taste. Each f℥j of solution (water) contains protoxide of arsenic gr. $\frac{1}{8}$, protoxide of mercury gr. $\frac{1}{4}$, iodine (converted into hydriodic acid) gr. $\frac{4}{5}$, chemically combined together. Mr. Donovan gives the following directions for preparing it:

Triturate 6·08 grs. of finely levigated metallic arsenic, 15·38 grs. of mercury, and 49·62 grs. of iodine, with f℥j of alcohol, until the mass has become dry, and from being deep brown has become pale red. Pour on aq. dest. f℥viij, and after trituration for a few moments, transfer the whole to a flask; add ℥ss of hydriodic acid, prepared by the acidification of gr. ij of iodine, and boil for a few moments. When the solution is cold, if there be any deficiency of the original f℥viij, make it up exactly to that measure with distilled water.

Action. Uses.—Alterative, stimulant, effective in various obstinate skin diseases, as lepra, psoriasis, &c.

D. ♏x—f℥ss, three times a day in distilled water. Externally, f℥j, to aq. dest. f℥j, as a lotion. (Royle.)

33. *Silver.*—Mr. Butler Lane† has given the following formula for the preparation of the oxide of silver:

"Dissolve four parts of nitrate of silver in distilled water, also rather more than two parts of hydrate of potash in a separate quantity, freeing it by filtration from the oxide of iron and other impurities; mix, and let stand for an hour, stirring frequently with a rod of wood or glass; the supernatant liquid will be found to be a solution of nitrate of potash, the freedom of which from nitrate of silver may be ascertained by taste, or by testing with hydrochloric acid, showing that complete decomposition has been effected, otherwise more solution of potash should be added. The fluid is then to be poured off, and the precipitated oxide of silver to be washed repeatedly with distilled water until the liquid is found to remain perfectly clear, and quite devoid of all taste and alkaline reaction. The precipitated oxide is then to be drained on filtering paper, and thoroughly dried at a temperature of about 180° Fahr.

"Four parts of nitrate of silver thus treated, will be found to yield about three parts of the oxide. This mode of preparation will be found very facile, and totally unattended with danger."

* Chemistry and Physics, &c., by Baron Justus Liebig, p. 50.

† Pharmaceutical Journ., Oct.

§ II.—*Vegetable Materia Medica.*

34. Papaveraceæ.—*Preparations of Opium.*

Citrate of Morphia was recommended by Dr. Porter, of Bristol, under the form of liquor morphia citratis, and made by macerating opium ℥iv with citric acid ℥j and aq. dest. Oj. It does not appear nccessary, as the officinal preparations of morphia seem sufficient.

35. *Bimeconate of Morphia.*—Mr. Squire, on reflecting that the natural salts separated from the other ingredients existing in opium might form the best therapeutic agents, has prepared a solution of the bimeconate of morphia, which is nearly of the same strength as laudanum. Several practitioners have borne testimony to its being less exciting than opium, and equally, if not more, efficacious than the other preparations of morphia.

36. *The Black Drop* is a celebrated nostrum, in which opium is boiled with aromatics in verjuice (from the wild crab), and sugar is added, and fermented, One drop is considered equal to two or three drops of laudanum. The above or the salts of morphia, arc the best substitutes. *Liquor opii sedativus* of Mr. Batley is another secret preparation, which has long been esteemed by the profession for its efficacy, and its little disagreeable effects as an opiate: it is supposed by some to be an aqueous, and by others an acetous solution of opium. Mr. Cooley states that it is an impure meconate of morphia combined with extractive and such other matter as is soluble in temperate distilled water, and that we may produce it by the following formula:—Take *dry opium* (Smyrna) *in powder*, 1 part, *clean washed* (silica) *sand*, 2 parts; mix, and moisten with water, introduce into a percolator, and pass *aq. dest.* at 65 or 70° F. through the ingredients, until it passes both tasteless and colourless. Evaporate the liquor (by steam or water-bath) to the consistence of a *hard pill extract.* Take of this *hard extract* ℥iij and *aquæ destil.* ℥xxx: boil for two minutes, let it cool; filter, then add *rectified* spirits ℥vj and *aq. dest.* q. s. to make up nearly f℥xl, or one quart. D. ♏ v.—♏xx are equal to about ♏xxx of laudanum.

37. *Sanguinaria* is the root of *Sanguinaria Canadensis. Blood-root, Puccoon, Indian Paint, Turmeric.* An herbaceous perennial plant, which flowers early in spring, and grows abundantly in every part of the United States. The root, which is the only officinal portion, when dried, is in flattened pieces, much dried and contorted. The fracture is spongy and uneven; its surface being at first bright orange, but becoming, by exposure, of a dull brown colour. It has a bitterish acrid taste, and imparts its virtues to water and alcohol. An active principle, *Sanguinarine*, has been obtained from it, which is alkaline, and considered to possess all the virtues of the root. It is said to lose its virtues rapidly by keeping. Blood-root is an acrid emetic, and, in large doses, belongs to the class of acro-narcotic poisons. It is not often employed as an emetic. The dose of the powder, with this view, is from ten to twenty grains. It is recommended that it should be taken in pill by preference, in consequence of the great irritation of the throat produced by the powder when swallowed. (Wood and Bache.) It may be also prescribed in infusion: *Sanguinariæ* ℥ss; *aq. fervent.* Oj; of which the dose may be a tablespoonful or two.

Tinctura sanguinariæ, tincture of blood-root. *Sanguinar.* cont. ℥iv, *alcohol dilut.* Oij. Prepared by maceration, or by the process of displacement. The dose, as an emetic, is f℥iij to f℥iv; but it is not often administered as such.*

* Dunglison's Elements of Materia Medica.

38. Dipterocarpeæ.*—The Dipterocarpeæ, so named from some of the divisions of the calyx being extended into long wing-like bodies, require to be noticed, as one of the species, *Dryobalanops aromatica*, Gærtn., D. Camphora (Colebr.), has been selected, though incorrectly, in the D. P. as the plant yielding the camphor of European commerce. This kind is produced by one of the tribe of laurels, the *Camphora officinarum* of Nees v. Esenbeck. But the kind called Sumatra, or Borneo camphor, as well as liquid camphor, is produced by the above tree, which is a native of Sumatra and Borneo. On the coast of the former island it is one of the largest of trees; and the same tree, it is said, which yields the oil would have produced the camphor if unmolested. This kind is not seen in European commerce, because the Chinese give eighty or a hundred times more money for it than that for which they sell their own camphor. Specimens of both the Sumatra camphor and of the liquid camphor are in the Museum of King's College, having been presented by Mrs. Marsden.

Action. Uses.—The liquid camphor, or oil, might no doubt be beneficially employed for the same purposes as cajaputi oil and grass oil. The Sumatra camphor does not appear to be preferable to that of China. (Royle.)

Theaceæ—*Thea.*—"The properties of Teas depend chiefly on the presence of tannin, of a volatile oil, and of a principle called *Theine* ($C_8 H_5 N_2 O_2$), which has been found to be identical with *caffeine*, and is a salifiable base. It may be obtained in white silky needles, has a mild bitter taste, is soluble in hot, but sparingly so in cold, water and alcohol. With SO_3 and HCl it forms crystalline compounds, and is supposed to exist in tea in combination with tannic acid. The quantity of tannin is stated by Brande, and as appears by the taste, and in the analyses of Mulder, to be greater in green than in black tea. Sir H. Davy and others have stated that black tea contains the largest proportion of tannin. The volatile oil is in larger quantity in the green than in the black tea. Tea is well known for its astringent and moderately exciting properties, chiefly affecting the nervous system, producing some degree of exhilaration, and of refreshment after fatigue. Its effects are well seen in the wakefulness produced, especially by green tea, in those unaccustomed to its use. But it is thought by some to act as a sedative on the heart and blood-vessels, or, as Dr. Billing explains it, tea and coffee are sedatives, and relieve the stupor produced by stimulants, or the drowsiness of fatigue or other plethora, only by counteracting the plethoric state of the brain induced by the continued stimulation of action, thus merely restoring the brain to its normal state."†

39. Guttiferæ.—"*Gamboge*‡ is stated by Murray (App. iv, p. 110) to have been first introduced to the notice of Europeans by Clusius, who received it from China in 1603. It is known in India by the name of *ossarch rewum*, or juice of rhubarb. This substance is mentioned in Persian works on materia medica; but we are unable to ascertain when gamboge came to be first substituted for the real extract of rhubarb, which Dr. Falconer informs me he obtained in Thibet by the same name. Two kinds of Gamboge, Siam and the Ceylon, are known in commerce. The former is commonly in cylinders, either solid or hollow. Specimens of both kinds were given to the author by G. Swinton, Esq., when chief secretary of the Indian Government, which had been sent to him officially from Bankok as the produce of Siam. This form is no doubt

* Several other important products are yielded by the Dipterocarpeæ, as wood-oil, which contains a principle analogous to Balsam Copaiva; the Resin, or Dammer of Shorea Robusta; Indian copal (sometimes mixed with amber, and sold as such), which is the liquid varnish inspissated of the Pinei tree, or Vateria Indica, of which the fruits yield to boiling water the esteemed and valuable vegetable butter of Canara.

† Royle, Op. cit. p. 291. ‡ Ibid. p. 302.

given by the gamboge, when in a fluid state, being run into hollow bamboos, as described by Lieutenant White. I am indebted to Dr. Pereira for one of these imported a few years since. Kienig learned from a Catholic priest, who officiated as such to the Christians of Cochin China, that the juice was obtained by breaking off the leaves and young shoots, and receiving the yellow juice as it issues in drops, in suitable vessels, a cocoa-nut or a bamboo; also, that it formed a part of the tribute paid to the king of Siam. It is, therefore, most probably abundant, perhaps cultivated. The tree yielding this gamboge is unknown to botanists. It may be the *Oxycarpus* (now Garcinia) *cochinchinensis* of Louriero, who describes it as being both wild and cultivated in Cochin China; and Rumph (iii, p. 58) describes it as exuding, when wounded, a yellow and viscid juice, which quickly dries up. Other species of garcinia yield a yellow, resinous juice. Dr. Malcolmson favoured the author with specimens of one of the Guttiferæ, which he collected near Rangoon, and of which the rind of the fruit yielded a yellow purgative juice.

"*Stalagmites Cambogioides*, quoted in the L. P., &c., has been founded on a factitious specimen, which is still in the British Museum. This Mr. Brown ascertained to be formed of two plants joined together by sealing-wax; one being *Xanthochymus ovalifolius*, Roxb., and the other *Hebradendron cambogioides* of Graham. The Ceylon gamboge is found in the bazaars of India, but is seldom met with in Europe. Mr. Charles Groves, now of Liverpool, informed me in 1832, that when engaged in the trade of Ceylon, he had sent a considerable quantity of the gamboge of that island to London, but it was found unsaleable from its inferior quality. Two trees yielding a gamboge-like substance were first made known by Hermann in 1670; one, Goraka, *Garcinia Cambogia*, and the other *Kana* (or eatable) *Goraka*, *Garcinia Morella* of later authors, *Stalagmites* of Moon's Cat., now *Hebradendron Cambogiodes*. The latter (though it might have been referred to Garcinia with an amended character) was named and described by my friend Professor Graham, of Edinburgh, from specimens and drawings sent him by Mrs. Colonel Walker, who had seen the tree in different parts of the island of Ceylon. Colonel Walker writes to Dr. Wright, that it is found in great abundance along the western and eastern coast in the neighbourhood of Battacola, but also inland, especially in low sandy ground, about Kandcrane, Negombo, and towards Chilan; also one hundred miles inland, at so high an elevation as two thousand feet above the sea. Mrs. Walker says the gamboge is collected by incisions into, or by cutting pieces off the bark, about the size of the palm of the hand, early in the morning. The gamboge oozes out in a semi-liquid state, but hardens on exposure to the air, and is scraped off by collectors next morning. She describes it as brilliant and excellent, and as good for water-colour drawings as any she ever used. Dr. Christison has shown that it has all but an identity of composition with that of Siam; and its medicinal effects were considered precisely the same by Dr. Pitcairn in Ceylon, and by Drs. Graham and Christison in Edinburgh. That procured in Indian bazaars, which is spongy in structure, was not found to be so good as a pigment by the East India Company's painters, when under the author's charge; nor was it found so effective as a purge, in the hospitals at Saharunpore. Dr. Graham ascribes its inferiority, probably with truth, to the want of care in preparing the article for market.

"Besides the species *Hebradendron Cambogioides*, there is another probably belonging to the same genus, or to the same group of a larger genus, which appears to yield a very good kind of gamboge, and one which may prove a good substitute for either the Ceylon or Siam kind, and that is *Garcinia Pictoria*. Roxb. Fl. Ind., ii, p. 627. Dr. Roxburgh says, 'I have frequently received samples of the gamboge the produce of this tree from my good cor-

respondent, Mr. S. Dyer, the surgeon at Tellicherry, and I have uniformly found it, even in its crude unrefined state, superior in colour, when recent, to every other kind I have yet tried, but not so permanent as that from China.' This, Mr. Dyer, who is now in London, informs me he cannot understand; for he found it excellent as a pigment, and effective as a purgative, and, so far as he remembers, equal to the gamboge then in common use.*

"*Siam gamboge* is usually seen in cylinders, either solid or hollow in the centre, whence it is commonly called *pipe gamboge*, varying in length and thickness from half an inch to two inches, striated externally, evidently from the impressions of the bamboo mould into which it was run when soft. Sometimes these cylinders are doubled upon themselves, at others stuck together; all generally of fine quality.

"*Lump*, or *cake gamboge*, in round cakes or masses, several pounds in weight, most commonly inferior in quality to the former, and often mixed with impurities, as fecula and woody fibre.

"*Coarse gamboge*, formed of the fragments and inferior pieces of the other, which are, however, often mixed with impurities, and not entirely soluble in ether and water.

"*Ceylon gamboge*, though unknown in European commerce, is sometimes seen in irregular masses, often cavernous, or with many sinuous hollows, like the sponge, probably from having oozed out irregularly; the colour, a uniform yellow, except on the parts exposed to light, where it is darker; brittle in texture. There seems no difficulty in obtaining it in a pure state; and, if so, might become an article of commerce from Ceylon. The pure pieces were found by Dr. Christison to be identical in composition and purgative properties with the gamboge of Siam. The specimen in King's College Museum was given to the author by the late Dr. Malcolmson.

The latest analysis of Gamboge is that by Dr. Christison:

Pipe Gamboge of Siam.		Cake Gamboge of Siam.		Ceylon Gamboge.	
Resin . .	72·2	Resin . .	64·8	Resin .	75·5
Arabin . .	23·0	Arabin . .	20·2	Arabin	18·3
Moisture .	4·8	Fecula . .	5·6	Cerasin	0·7
		Lignin . .	5·3	Moisture	4·8
		Moisture .	4·1		

"The characteristics, E. P., of good gamboge have been given above. Iodine will detect starch. Mechanical impurities can be seen. In external appearance it can only be confounded with the yellow resinous juices of some others of the Guttiferæ; of these, that of Garcinia Cambogia, as described by Dr. Christison, is soft, of a pale lemon-colour, and incapable of forming an emulsive paste with the wet finger. That of Xanthochymus pictorius has a pale yellowish-green colour, and some translucency, and is not at all emulsive; also, as observed by Dr. Percira, it may be confounded with *yellow gum*, or rather resin, of the Grass-tree, Xanthorrhæa hastile of New Holland. The presence of gamboge may be detected by the effects produced

* While this sheet is passing through the press I have received a letter from Dr. Christison, informing me that he had at length got the Coorg or Wynaad gamboge from Mrs. Gen. Walker, but not the plant yet, though it has been seen in the jungles near Cannanore. This gamboge has the composition of that of Siam, but with less gum, is "a capital purgative, and makes an excellent pigment, not fugacious as Roxburgh says" This is fully confirmed by a specimen of paper coloured with it which Dr. Christison has had the goodness to send me. The new information will form a very desirable addition to Dr. Christison's admirable paper on the gamboge.

by it on water, alcohol, ether, and caustic potash. The *gambogiate of potash* gives, if the alkali be not in excess, with acids a yellow precipitate (*gambogic acid*); with *acetate of lead*, a yellow precipitate (*gambogiate of lead*); with sulphate of copper, a brown (*gambogiate of copper*), and with the salts of iron, a dark brown precipitate (*gambogiate of iron*)."

Since this portion of Dr. Royle's work was printed, Dr. Christison has published his observations on the Coorg, Wynaad, or Mysore Gamboge, referred to in the note to page 390. We select the following observations from his paper:

"While residing not long ago at Cannanore, Mrs. Walker learned from a party of the Company's engineers that they had observed what seemed to be a gamboge tree in the jungles of the Coorg country. This party had been for some time employed, under the command of Captain Cotton, Lieutenant Francis, and Lieutenant Walker, my correspondent's son, in tracing a projected road from Mysore, through the unfrequented jungles of the Coorg Ghauts, towards the Malabar coast. In these operations they had to 'penetrate dense forests, abounding with trees producing vast quantities of gums and resins,' and, among the rest, with the tree in question. Lieutenant Francis states that this tree was seen almost everywhere on the route from Cannanore to the Ghauts of the Coorg country, and that at one place their encampment in the forest was quite surrounded by it. From this gentleman Mrs. Walker received a small specimen of the exudation, which she obligingly forwarded to me; and he added the remark that he 'could not detect any difference between it and the colour-makers' gamboge in tint; but on putting the brush into the mouth, it does not burn as it ought to do.'

"Dr. Cleghorn's observations were made last autumn, while accompanying, in his professional capacity, the same party of engineers, under the superintendence of Captain Le Hardy, in the north-west district of Mysore, near Nuggur. He observes, in his first letter, dated from that place on the 3d March—

"'When accompanying our superintendent, Captain Le Hardy, in his autumnal tour, the gamboge-bearing tree was first observed near the north-western frontier of Mysore, as we were proceeding through an interesting, almost unexplored, country, everywhere affording the most picturesque scenery, covered with jungle more or less dense, supplying abundant materials for the botanical traveller, and especially remarkable for the Gairsoopah Falls, where the river is precipitated over a vertical scarp 900 feet in height. . . . . The tree, which grows to an elevation of thirty or fifty feet, was met with along the tops of the Ghauts from Gairsoopah to Nuggur, a distance of fifty miles; and I understand it grows in greater abundance ten miles southward of this. It would appear that its range of elevation is between 2000 and 3000 feet, though it has also been seen sparingly on the sloping descent for some distance down the Ghaut. It is generally found in thick jungle, overtopped by the sago-palm and other forest trees of great height. The foliage is dense, the branches shoot out horizontally, two or three occasionally coming off in the same plane; and in general contour it reminds me in some measure of the box on a gigantic scale.'

"In a subsequent letter, dated at Anpoombie, 22d March, Dr. Cleghorn adds, that he found the tree in still greater abundance as he proceeded southward; and in another, dated a month later, he remarks that on leaving the cool and humid range of the Western Ghauts, whose moist and shady slopes seem to afford a congenial climate, he lost sight of the gamboge tree entirely. From a variety of accounts collated by Mrs. Walker, it has evidently an extensive range, having been met with by the engineering party along a tract of

hilly country extending nearly 120 miles from north to south. It seems to flower during the rainy season of the monsoon; at the close of which the yellow juice is said to be exuded in great abundance. It is called in the Canarese language *Goorgeemara*, or yellow gum-tree.*

"The specimens of the juice sent to me were all in the concrete state. Those sent by Mrs. Walker present on a fresh surface a tawny brownish-yellow colour, and glistening waxy lustre, exactly like fine Siam gamboge; and they show a tendency to the conchoidal fracture. They are free of odour, and, in correct language, tasteless; but I have not found them destitute of acridity, as Lieutenant Francis did; for in a few seconds after tasting a small portion an acrid impression was produced in the back of the palate, like what is occasioned by Siam gamboge. The Mysore gamboge is emulsive. Mrs. Walker's specimens are not quite so easily reducible to a fine emulsion with water as the superior qualities of that from Siam; but the subsequent specimens of Dr. Cleghorn seem to me not at all inferior in this respect to the best commercial gamboge. The emulsion presents the peculiar, brilliant, intense yellow hue of ordinary gamboge. When it is used as a pigment, I am unable to detect the slightest difference in tint from that variety. I put it into the hands of a skilful colorist, along with a specimen of the finest pipe-gamboge of Siam, of a quality seldom met with in the colour-shops; and I received an opinion that the Mysore gamboge was not so easily rubbed down, and that upon paper the tint presented the slightest possible shade nearer brown; but nevertheless that it appeared a superior gamboge, undistinguishable from the gamboge of the shops, except on the most narrow inspection. In stating this opinion it is necessary to add that the standard of comparison had obviously been collected with the greatest care, while Mrs. Walker's specimen had not this advantage, analysis proving it to be not quite pure; and that the specimen from Dr. Cleghorn, which proved to be considerably purer, is evidently more emulsive.

"The analysis of these specimens was performed nearly in the same manner as that of the Ceylon and Siam varieties, of which an account was given in my paper in 1836. These were found to consist essentially of an orange-coloured resin, very soluble in sulphuric ether, of gum, which is entirely and easily soluble in water, and of a little adhering moisture. But the Ceylon gamboge also contained more or less woody fibre, accidentally present, owing to want of due care in collecting it; and the inferior qualities of Siam gamboge contained varying proportions of ligneous fibre and starch, owing to adulteration with the flour, probably, of some leguminous seed. Since this analysis was executed, the same subject has been taken up by Dr. Ph. Buchner, who examined specimens of Siam pipe-gamboge and common Ceylon gamboge, presented by me to Professor Liebig; and he found, besides the proximate principles observed by me, a trace of brown colouring matter in the Siam specimen, and about four per cent. of a similar principle in that from Ceylon. I have found this substance both in Ceylon and Mysore gamboge. A fine sample of the former, prepared under Mrs. Walker's instructions when she resided at Colombo, contains three and a half per cent. of this matter, and has the following composition:

Resin	74·8
Gum	16·5
Colouring matter	3·5
Accidental fibre	2·2
Moisture	4·0
	101·0

* Annalen der Chimie und Pharmacie, xlv, 71, 1843.

"One hundred grains were used; the excess over which is owing to the obstinate adhesion of ether to the resin even at an elevated temperature. The colouring matter is obtained, after removal of the resin with ether, by acting on the residue with rectified spirit, and then evaporating off the spirit from this solution. The solution is colourless; but there is left a dark smoke-brown extractiform substance, which is soluble in water, and imparts to the water a brown tint.

"The Mysore Gamboge, like that of Ceylon, is in a great measure soluble in sulphuric ether, to which it communicates a fine orange colour; and the solution yields, when evaporated, an orange-coloured resin, identical in appearance with that from Siam gamboge. From the residuum rectified spirit, without acquiring any colour, removed a substance which was deposited on evaporation in the form of a dark smoke-brown extract, like that obtained from the gamboge of Ceylon. The matter unacted on by the spirit immediately formed an emulsive solution with cold water, which, when evaporated, left an adhesive transparent substance, possessing the general properties of gum. Dr. Cleghorn's specimen left scarcely any residuum after the action of cold water; but that obtained from Mrs. Walker left about three per cent. of particles of fibre and sand. From an analysis of 20 grains of each sample, a quantity, however, scarcely sufficient to yield very positive results, the Mysore gamboge seems to have the following composition:

	I.	II.
Resin	77·0	80·0
Gum	14·0	14·0
Colouring matter. .	5·0	5·0
Fibre and Sand . .	3·0	0·5
Moisture . . .	Not determined	
	99·0	99·5

"This composition is essentially the same with that of Ceylon gamboge, but indicates more colouring matter, more resin, and less gum, than in the gamboge of commerce. These differences, however, do not materially affect its emulsive property; and as for the brown colouring matter, this seems scarcely to injure the purity of its hue as a pigment; for the brown colour is not developed until the principle has been detached by alcohol, and dried under exposure to the atmosphere.

"It remains to inquire whether the Mysore gamboge possesses the remarkable effects of the Siam and Ceylon varieties on the animal body. My supply would not allow of many trials being made of its virtues: but three grains, triturated with a little bitartrate of potash, produced one copious evacuation; four grains had the same effect. In another case four grains failed to move the bowels; and in another, five grains occasioned five profuse discharges. In every instance tormina were caused, and also sickness; and one person had several attacks of vomiting. The discharges were invariably very watery, yellowish, and abundant. This gum-resin, therefore, seems to exert the same action, attended with the same inconveniences, as ordinary gamboge."

40. Oxalidiæ.—*Oxalis Acetosella.*—This elegant little plant is found throughout Europe in shady places. It is distinctly noticed from the time of Charlemagne, and is supposed to have been known to the Alexandrian School. Mr Biehend considers it to be the true shamrock.

Action. Uses.—Refrigerant, antiscorbutic; allays thirst; occasionally used in salad, and its infusion, as a substitute for lemonade, highly extolled by Frank in petechial fevers; is injurious in cases of the mulberry, or oxalate-of-lime calculus.

41. *Acidum Oxalicum. Oxalic Acid. Acid of sugar.*—Oxalic acid ($C_2 O_3 + 3$ Aq. $= 63$ when crystallized) has obtained its name from the foregoing plant. It is said to be containcd in a free state in cicer arietinum, but is probably in the state of binoxalate. It is acid and powerful enough to blanch the boots in walking through a field of the plant. Some lichens contain a very large proportion of oxalate of lime. It is now obtained in the largest quantities from the action of nitric acid on several substances of the nature of sugar and starch, including these substances themselves. Hence it has been called acid of sugar. Numerous fatal cases have occurred from the resemblance of its crystals to those of Epsom salts. But they may be readily distinguished by their crackling noise when dissolving in water; by the intensely acid taste and reaction of the solution; by its effervescing with the alkaline carbonates, which give a white precipitate with Epsom salts of sulphate of magnesia This is moreover distinguished by its nauseously bitter taste. The crystals of oxalic acid also resemble those of sulphate of zinc. Oxalic acid is distinguished by its powerful affinity for lime, separating it even from sulphuric acid. The oxalate of lime formed is insoluble in an excess of acid. A soluble oxalate will be detected by the solution of a neutral salt of lime or of oxide of lead. The acid may be separated from the lead by the action of sulphuretted hydrogen, and then being filtered and evaporated, it will crystallize. Insoluble oxalates, the bases of which form insoluble compounds with sulphuric acid, may be decomposed by the action of this acid, when the oxalic acid will be separated.

Action. Uses.—A virulent poison, which is very speedy in its action. Acute pain is immediately experienced, followed by vomiting. Great depression of the circulation ensues, nervous symptoms, such as great debility, numbness, &c., sometimes followed by convulsions. "But death follows so speedily after the injection of large doses—few of those who have died have survived above an hour—that the symptoms have not been fully made out." Irritation and corrosion of the stomach are observed.

42. *Binoxalate of Potash.*—($K O, C_2 O_3 + 2$ Aq.$=138$.) The salt which is contained in wood-sorrel and other plants, is often called *salt of sorrel*, or of *wood-sorrel*, and, very absurdly, *essential salt of lemons.* It may be obtained from the juice of the plant by evaporating and then redissolving, and subsequently crystallizing; or by neutralizing a portion of oxalic acid with carbonate of potash, and then adding an equal quantity of oxalic acid, when the salt is obtained in colourless rhombic prisms, having a sour taste, and requiring 40 parts of water for their solution. This salt may be used for the same purposes as the plant itself, but in large doses will act as a poison.

43. *Quadroxalate of Potash* ($K O, 4 C_2 O_3 + 7$ Aq.$=255$) is usually sold in the shops for the above salt, and is much used for removing iron-moulds and ink-stains. It may be made by a process similar to that just mentioned, but adding three more parts of oxalic to the oxalate.—(Royle.)

44. Leguminosæ.—*Senna.*—In his observations on the sennas of commerce, Dr. Royle gives the following account of the Tinnivelly and Bombay sennas:

"1. *Tinnivelly Senna*, first cultivated in the district of that name, in 12° N. lat., by Mr. Hughes, from seed probably obtained from Arabia, or picked out of *Suna Mukki* (an African product identical in appearance with Arabian Senna), as was done by the author when he cultivated senna at Saharunpore. The author also grew senna from Tinnivelly seed sent to him by Sir C. Metcalfe, but he did not find the smallest difference between the two when grown in the same situation. The Tinnivelly Senna is well-grown and carefully picked; the leaflets are of a fine, rather lively, green colour, thin but large, being from one

to two inches in length, truly lanceolate. This kind is 'highly esteemed in this country, and is quickly displacing all the other sorts in this (that is, Edinburgh), and many other cities in Britain.' (Christison.) Dr. A. T. Thomson says of it, 'it is mild in operation, certain as a purgative, and operates without griping.' It is now cultivated by Mr. Hughes's successor.

"*Saharunpore Senna*, the same kind of senna, cultivated at Saharunpore, differed only in the leaflets being smaller, as might be expected from the more northern latitude (30°). These the author prescribed in the hospitals at Saharunpore, and found them effective as a purge, and operating without producing inconvenient nausea or griping. Mr. Twining, after trying them in forty-five cases in the General Hospital at Calcutta, says, in his report to the Medical Board, 'from these trials I am disposed to consider the senna now under trial equal to the best I have ever seen.'

"*Madras Senna.*—Senna is now imported from Madras, the produce of that Presidency. In 1843-4, I find 11,536 lbs. were exported to this country, having been previously imported into Madras from Tinnivelly, where it is cultivated by the natives, and is of the same nature as Mr. Hughes's senna, though not so well-grown nor so carefully picked. Dr. Christison says of it, 'the leaflets are longer than those of Bombay senna, and not so taper-pointed, but otherwise differ only in being better preserved, and being more active, are more esteemed.' Dr. Searle, in a communication to the India House, says of this senna, 'that now furnished by the Madras Government is in my experience as good quite as the Alexandrian, every leaf of the Indian being of the genuine spear-shaped species.'

"*Bombay* or common Indian *Senna*, *Suna Mukki* of the natives, forms a large, if not the largest proportion of what is consumed in this country, as is not only evident from the accounts of its importation, but also from a comparison with the whole quantity of the other sennas imported, as given by Dr. Pereira. Some of this senna is no doubt produced in Africa, as stated above by Dr. Malcolmson, a good deal of it in Arabia, probably by *Cassia lanceolata*, and some perhaps by *C. Forskolii*. The leaflets are thin, lanceolate, usually entire, about an inch or an inch and a half in length, narrower than either the Tinnivelly or Saharunpore Senna, probably from growing in a poorer soil and drier climate. They are of a pale green colour, often with dark brown-coloured leaflets intermixed, also some pods, and many leaf-stalks, with, occasionally, other impurities. The good specimens of this senna are, however, of excellent quality, and its commercial and medical value would be much increased, if the finest leaflets were picked out. It is in constant use in hospital practice in India, and generally highly approved of. The author prefers them for all purposes to the Alexandrian kind as found in commerce."

Dr. Royle's observations on the Alexandrian, Tripoli, and Aleppo sennas require no especial notice.

"*Adulteration.*—Commercial senna is prepared for use by picking out the leaflets and rejecting the leaf-stalks; also extraneous matter, as dust, date-stones, &c., as well as the leaves of other plants. The legumes, however, possess the cathartic properties of the leaves to a considerable extent, and were alone used by the original Arabs; and there is no reason to believe that the stalks are inert. The most important adulterations are, however, the leaves of other plants. Those of the *Argel* may be distinguished by being lanceolate, equal on the two sides of the midrib, thick, leathery, and paler. They operate very dubiously as a cathartic, but occasion griping and occasional sickness. Those of *Tephrosia Apollinea* are obovate downy, and the veins proceed transversely from the midrib to each margin of the leaf without forming a marginal vein. The leaves of *Colutea arborescens*, or

bladder senna, are ovate, but equal at the base. Those of *Coriaria myrtifolia* are astringent, usually broken down, and marked on each side of the midrib with a strong lateral nerve. As the systematic adulteration of senna, in Egypt, with the leaves of other plants is objectionable, and has been so noticed by the Pharmaceutical Society, the most efficient method of stopping it would be to purchase only the pure African and Arabian sennas, which come to us by Bombay, instead of (unless it has been picked) that which is called Alexandrian, from its place of export. In India a good substitute for senna is afforded by *Rae Suna.*

"The *active principles* of senna are extracted both by rectified and by proof spirits, and both by cold and by hot water; but long boiling injures its properties as a medicine. A very useful set of experiments has been made by Mr. Deane (Phar. Journ. iv, 61), from which he finds that, though the best result was obtained by macerating senna in a weak spirit, yet that cold water extracts the soluble and active portions nearly, if not quite, as well as hot water, and that picked Alexandrian senna, of the best quality, is superior to all the others from the quantity of extract it contains. Of the East Indian, that from Tinnivelly is best; and that the common East Indian is better than small Alexandrian. But it has not been proved that the purgative property is in proportion to this extract. He found that senna 7½oz. troy were completely exhausted by diluted spirit (1 part spirit to 5 of water) 20 fl. oz., and the product four times the strength of the Inf. Sennæ. L. P."

*Cassia Marilandica.** American Senna.—This is an indigenous plant, from three to six feet high, with flowers of a beautiful golden-yellow colour, which is very common in every part of the United States; to the south of New York, growing most abundantly in flat ground on the margins of rivers and ponds. It is sometimes cultivated in the gardens for medical use. The leaves of *wild senna*, as it is sometimes termed, are collected in August, or the beginning of September, and carefully dried. It is in full bloom in the months of July and August. In the shops of this country the leaves are often met with in compressed cakes, prepared by the Shakers. They have a feeble smell and a disagreeable taste, somewhat resembling that of senna. They would appear to contain an active principle, similar to the *cathartin* of senna, and they yield their virtues to both water and alcohol. The medical virtues of American senna are similar to those of the imported article; but it is not so active, requiring to be given in a dose about one third larger. It may be prescribed, like senna, in the form of an infusion.

45. *Indigo.*—In Dunglison's 'Materia Medica' we find the following observations. "The well-known colouring material *Indigo* is obtained by fermentation from several species of the genus *Indigofera*,—I. tinctoria, I. anil, I. disperma, I. argentea, and I. hirsuta During the fermentation the indigo, which is an educt of the process, is deposited as a feculent matter. It is chiefly brought from the East Indies, but a considerable quantity is derived from Guatemala, and other places. As we receive it, it is generally in small, solid, brittle masses, of a deep azure colour, without smell or taste, and assuming a copper colour on being rubbed. Of late indigo has been prescribed in various spasmodic diseases, and especially in epilepsy; and many individuals have deposed to the services it has rendered. Others, however, have not testified so favorably. Some trials made with it at the Philadelphia Hospital were favorable, and others not at all so. It is obvious, however, that a wide difference must exist amongst cases of epilepsy, and that where the organic modifications are considerable, but little can be expected from any remedy;

* Dunglison's Materia Medica.

but even in such hopeless cases the number of paroxysms would seem to have diminished under its use. Where the cerebral affection is slight, and more functional than organic, indigo, like artemisia, and some other remedies extolled in epilepsy, may be useful. It certainly, from the doses in which it may be administered, appears to be nearly inert, and perhaps its main efficacy, as the author has said of the ferri subcarbonas, consists in the new impression which it makes, in adequate doses, upon the nerves of the stomach, and through them, upon the whole system; but to effect the revulsion to the necessary extent, it is important that the dose should be augmented, day by day, and the remedy be continued in large doses for a sufficient length of time. Indigo may be begun with in the dose of ʒj, and this may be doubled daily, until the patient takes ℥ij in the day, which may be continued for weeks. As the powder is very light, it has been proposed to give it in the form of electuary, with simple syrup as the constituent. Some aromatic, as the *Pulvis aromaticus*, may be added to it, to prevent it from exciting nausea, which it probably does from quantity only."

46. Myrtaceæ.—*The Pomegranate.*—"The bark of the root (radicis cortex) was employed as an anthelmintic by Dioscorides and by Celsus, and still is so in India. It was reintroduced into practice by Drs. Buchanan and Anderson. The root itself is heavy, knotted, and of a yellow colour; its bark often sold in strips, sometimes with parts of the root adhering to it. On the outside of a grayish-yellow colour; on the inside, yellow, something like that of the barberry. It has little smell; when chewed, colours the saliva yellow, has an astringent taste, without any disagreeable bitterness. It has been analysed by Mitouart and Latour de Trie, and others; but the source of its peculiar anthelmintic powers has not been discovered, and the subject requires further investigation. It contains tannin (about 20 per cent.), gallic acid, resin, iron, fatty matters, and mannite. An infusion yields a deep blue precipitate with the salts of iron, a yellowish white one with solution of isinglass, and a grayish yellow one with corrosive sublimate, and potash or ammonia colours it yellow. It is apt to be adulterated with the barks both of box and of barberry. The former is white and bitter, but not astringent; the latter yellow, very bitter, and not thus affected by the above four reagents." (Royle.)

Dose.—A decoction may be formed by steeping for twelve hours, *of fresh root-bark of pomegranate* ℥ij, in water Oiss, and boiling down to Oj. Of this fʒij-fʒiv may be given in the morning fasting, and repeated every two hours, until three or four doses have been taken; pursuing the same course another day—if not efficient at first—with occasional doses of castor-oil. Dr. Budd considers it as efficacious in cases of tape-worm as turpentine, and much safer.

47. Umbelliferæ.—"*Assafœtida.**—A product of Persia and Affghanistan; is mentioned in the ancient Sanscrit Amera Costra. The ancients highly esteemed a gum-resin which the Romans called *Laser*, and the Greeks *οπος κυρηναϊκος*, or the Cyrenaic juice, from being produced in that region. The plant *σιλφιον* yielding it was an Umbellifer, and is represented on the coins of Cyrene. It has been discovered of late years, and named *Thapsia silphium.* This Laser had become scarce, even in the time of Pliny, who, as well as Dioscorides, describes another kind as obtained from Persia, India, and Armenia, which was probably the same that was known to the Hindoos. Avicenna describes *hulteet* as of two kinds; one of good odour, from Chiruane (Cyrene?), and the other fetid, like the present *assafœtida.* The term *assa* is no doubt of oriental origin, since it is applied to other

* Royle, Op. cit., p. 414.

gum-resins. Thus, benzoin is called *hussee looban;* it used to be called *lassa dulcis* in old works. Dr. Lindley has received the seeds of a Ferula called *hooshee.* Anjedan, the fruits or seeds (*φυλλον* of the Greeks), is usually translated *laserpitium.* The plant is called *angoozeh* by the Arabs. The root of *silphion* is described by Arrian as affording food to herds of cattle on Paropamisus.

Assafœtida is produced in the dry southern provinces of Persia, as in the mountains of Fars, and of Beloochistan, but chiefly in Khorassan and Affghanistan; likewise to the north of the Hindoo Khoosh range of mountains, where it was found by Burnes, and also by Wood's expedition to the Oxus.

"Dr. Falconer found it in Astore, introduced the plant into the Saharunpore Botanic Garden, as mentioned in the author's 'Product. Resources of India,' p. 223, and has obtained from it a small quantity of assafœtida. He also sent home numerous seeds, which were distributed from the India House to several gardens, but the author has not heard whether any plants have been produced from them; but he has no doubt that some of those, which the author is informed by his friend Dr. Christison are still in the Edinburgh Botanic Garden, were produced from these seeds, and not from those sent by Sir John M'Neill. The assafœtida is conveyed on camels into India across both the Punjaub and Bhawulpore, and is sold in large quantities at the Hurdwar fair; it is also conveyed down the Indus, and by the Persian Gulf to Bombay. Two or three kinds of fruit called seeds are met with, which are said to be those of the assafœtida plant; but there is no proof that more than one plant yields assafœtida. Dr. Falconer, an excellent botanist, after examining the original specimens, considers the plant he saw in Astore to be the same as that figured by Kœmpfer; and Dr. G. Grant, who saw the plant at Syghan, says, as stated by Dr. Christison, that its roots, leaves, and flowering stem correspond, on the whole, with Kœmpfer's description, except that the root is deeply divided, like the outspread hand. The E. P. assign *Ferula persica* as probably yielding some assafœtida. There is no doubt that its seed has been sent from the north-west of Persia as those of the assafœtida plant; but there is no proof, nor indeed is it probable, that it yields any of the assafœtida of commerce. The gum-resins of these Umbelliferæ are too similar to each other, for any but experienced pharmacologists to determine between *inferior* assafœtida and varieties of sagapenum or other gum-resins. As Dr. Falconer, the author's friend, and successor, as superintendent of the East India Company's Botanic Garden, at Saharunpore, has had excellent opportunities for examining the assafœtida plant, both in its native sites and as cultivated by himself, he has favoured the author with a full account of this important plant, which he conceives belongs to a genus allied to but distinct from Ferula. [For the botanical description of the genus *Narthex*, to which he refers it, we must refer to Royle.]

48. *Conium Maculatum.*—"There is little doubt," says Dr. Royle, "of this being the *κωνειον* of the Greeks, and the *cicuta* of the Romans, as has been long supposed, and as has been well argued by Dr. Pereira. The objection that it is not so clearly described as to be readily distinguished from other Umbelliferæ, would apply to accounts of many officinal plants, even in comparatively modern works. It is the *shokran* of the Arabs, who give *chunium* and *kunion* as its Greek name, and give *bunj-roomee*, or Turkish bunj, as another name. The name bunj is applied to henbane, while datura is *bunj-dushtee.* It was reintroduced into practice by Störck.

"This plant in its first year has a long slender root, and a few radical leaves. In the second year it throws up its characteristic and spotted stem, on all parts smooth, but possessed of a strong and fetid odour, compared to that

of mice. It may be known by these characters, and by its unilateral partial involucres and many crenated ridges of the fruit.* It is generally stated that the best time for collecting the leaves is when the plant is in full flower, or just before the forming of the fruit, as in other cases. This, Dr. Christison, who has paid great attention to the subject, doubts, as he has found that its poisonous properties are considerable in November and March of its first year. The fruit is more active than the leaves, and more so when green than when ripe and dry. The leaves especially should be carefully dried, in a dark airy room, at a temperature of about 120°, and preserved in well-closed, dark, and dry vessels. They should retain much of their natural deep-green colour, have a nauseous and somewhat acrid taste, with a peculiar mouse-like odour. This should be readily evolved when the plant is rubbed up with caustic potash.

"Several analyses have been made of conium. Giseke, in 1827, succeeded in concentrating its active principle with sulphuric acid. Geiger, in 1831, detached it in the form of a volatile and oleaginous alkali, possessed of powerful poisonous properties. The experiments of Geiger have been confirmed by Dr. Christison. Both found that the distilled water, though having the peculiar odour of hemlock, owing to the presence of its volatile oil, was not yet poisonous; but if the full-grown green fruits or leaves be distilled with water and caustic potash, a strongly *alkaline* and poisonous *liquid* passes over, which is *conia*. This has been found in the fruit and leaves, and exists in them as a salt, though its acid (coneic) is unknown. It may be detached by presenting an acid, as the sulphuric, which combines with the conia; or this, by the action of potash, may be detached from its acid and then distilled over with water at 212°. *Conia*, called also *conine* and *conein*, is a colourless and transparent oily-looking body, lighter than water, having a powerful mouse-like odour, and a very acrid taste. It is strongly alkaline. Water takes up but little of it, but with a fourth of its weight it forms a hydrate of conia. Alcohol and ether dissolve it readily, as do diluted acids, which indeed combine with it. Its vapour produces white fumes with the vapour of H Cl, hydrochlorate of conia being formed. Exposed to the air it becomes brownish; a resin and ammonia are formed. It boils at 370°. Liebig determined it to be composed of C_{12} H_{14} N O = 108. (C_{16} H_{16} N_2 *Greg.*) Subjected to a strong decomposing heat, an empyreumatic oil is yielded. It is most easily obtained by cautiously distilling over a muriate of lime-bath, a mixture of strong solution of potash with the alcoholic extract of the unripe fruit. (See Dr. Christison's able paper, Trans. Roy. Soc. Edin. 1836.)"

The tincture obtained by the process of percolation, Dr. Christison considers the best of all preparations for medical use. That made by Mr. Squire, by adding rectified spirit to the expressed juice without extracting the residuum, is also a good preparation.

49. Cinchonaceæ. *Cinchona.*—The amorphous quinine described in our last Report has given rise to much discussion. The preparation patented by Mr. Bullock seems to differ in several respects from the amorphous quinine described by Liebig, and further it seems doubtful whether the substance described by the latter chemist is actually pure quinine. The following observations on the subject from the pen of Mr. Redwood deserve notice in this Report:

* This plant should be distinguished from *Æthusa Cynapium*, or Fool's Parsley; and also from *Anthriscus vulgaris* and *sylvaticus*, as well as *Myrrhis odorata* and *temulenta*. The other poisonous Umbellifers are the above *Æthusa Cynapium*, Fool's Parsley; *Cicuta virosa*, Water Hemlock; *Œnanthe crocata*, Hemlock; Water Dropwort, *Œnanthe apicifolia*, which is probably only a variety of *Œ. crocata*.

"The method by which Liebig obtained the amorphous quinine, as described in his paper, consisted in dissolving quinoidine in a dilute mineral acid, precipitating it with ammonia or an alkaline carbonate, and then adding to the liquor an equal volume of ether, in which 'the precipitate dissolves, *with the exception of a dark brown residue.* On evaporating the ether, a resinous mass is obtained, having all the properties of an organic alkaloid.'

"This is the substance which Liebig submitted to analysis; and finding the result to coincide with that of the analysis of ordinary crystallizable quinine, he has concluded that this differs from the other only in being uncrystallizable.

"In pointing out the probable importance of this discovery, which presents a new source for a valuable remedial agent, from whence at least a supply might be obtained at a cheap rate for the use of the poor, Liebig states, 'It is necessary that the amorphous quinine should be separated from all admixtures and impurities, and prescribed in its pure state.' No other method than that above described is given for its purification; but it is stated, that while some specimens of quinoidine were found to consist almost entirely of amorphous quinine, others contained only a small per centage.

"It is remarkable that, in describing his experiments, no allusion is made by Liebig to the presence of cinchonine, or crystallizable quinine, in the quinoidine of commerce; nor are we told whether any means were adopted to ensure the absence of these from the product which he submitted to analysis. He states indeed, incidentally, that Geiger had discovered quinine accompanied by a resinous substance in commercial quinoidine, and cinchonine, and that this chemist, as well as Henry and Delondre, considered that the resinous substance impeded the crystallization of the sulphates of the two bases. Now, as cinchonine and crystallizable quinine, as well as Liebig's amorphous quinine are soluble in ether, it is evident that the method of purification described would be insufficient, if any crystallizable quinine or cinchonine were present in the quinoidine. The difficulty with which quinine crystallizes, and which, on its first discovery, led to the opinion that it was uncrystallizable, makes it the more necessary in this case that every precaution should be adopted against submitting to analysis, not one body, but a mixture of two or more bodies.

"On repeating the experiments, described by Professor Liebig, for obtaining the substance which he submitted to ultimate analysis, I have found that, if the quinoidine be good, it is sufficient to treat that substance with ether, and evaporate the ethereal solution to dryness. In some cases, however, the quinoidine contains salts of the alkaloids, when it becomes necessary to dissolve and precipitate it, as Liebig directs, before treating it with ether. The product of the evaporation of the ethereal solution is Liebig's amorphous quinine. As thus obtained, it is an amber-coloured, resinous-looking substance, without any crystalline structure. It has a peculiar, somewhat balsamic smell, and when dissolved, either alone or in combination with an acid, the taste is bitter, but more nauseous than that of a similar solution of crystallized quinine.

"I have observed, in the course of my experiments on this substance, that if, instead of evaporating the ethereal solution to dryness, it be submitted to spontaneous evaporation, and then examined under the microscope, it will be found to be thickly studded with crystals. These are of two kinds; the greater part of them are small and acicular (quinine?), but among them are some which are much larger, having the form of a quadrilateral prism with a rhombic base (cinchonine?). If, instead of using commercial ether, the solution be made in ether that has been washed with water, and from which

the dissolved water has not been removed by chloride of calcium, the crystallization will take place to a still greater extent. In this case, after exposing the solution to slow spontaneous evaporation in a closet, and then allowing the still soft residue to stand undisturbed for a week or ten days, I have found it to consist of a complete mass of crystals. The same result will ensue if the product of the evaporation of the ethereal solution be dissolved in boiling alcohol, and a little solution of ammonia added to it, a method which has long been adopted for promoting the crystallization of quinine.

"The conclusion seems to be obvious, that either the substance which Liebig has described as amorphous quinine is not amorphous, or that it is very easily transformed from the amorphous to the crystallizable condition. It is certain, however, that Liebig's analysis, and the inference founded thereon, relate to that part of quinoidine which is soluble in ether, and not to *the dark brown residue*, which is insoluble, and which when dried has the appearance of pitch. No analysis has been published of this substance, nor have we any authority for assuming that it possesses any of the characters or properties of quinine.

"Shortly after the appearance of Liebig's paper it transpired that the preparation of amorphous quinine had been made the subject of a patent.

"I had not at that time seen a specimen of the *patented amorphous quinine*, but having occasion shortly afterwards to examine some of it, I felt it my duty to send a statement of the result to the two leading medical journals. The fallowing is an extract from my communication, which was headed Amorphous Quinine.

"'I have made an examination of the compound sold under the above title, with the patentee's signature pasted over the cork, and find it to possess the following characters:—It is in the form of a dark dirty-brown powder, having somewhat the appearance of powdered extract of jalap. When heated, it agglutinates into a black pitchy mass, and emits a disagreeable smell; it is soluble in rectified spirit; it is soluble also in water, with the addition of a few drops to the grain of diluted sulphuric or some other acid, and the solution thus formed has somewhat the colour of tincture of bark, and a very bitter, rather disagreeable taste.

"'There is a wide difference between this substance and the amorphous quinine made as described by Liebig, and this difference is especially made apparent on treating the patented article with ether. It is well known that quinine is readily soluble in ether, and Liebig states that his amorphous quinine is also soluble in that menstruum, but the patented amorphous quinine is not. On treating this latter with ether, part dissolves, forming an amber-coloured solution, while a large quantity of a black tarry-looking substance remains adhering to the sides of the vessel in which the solution is made. On drying the insoluble part, it forms a hard black mass, like pitch, and this constitutes thirty per cent. of the original powder. If the ethereal solution be submitted to spontaneous evaporation, a great number of crystals will be formed on the sides of the vessel, which present the characters of cinchonine, and the remainder, on being finally dried over a water-bath, assumes the characters of amorphous quinine.

"'It is thus evident that the substance sold as amorphous quinine, the preparation of which has been secured by patent, is not that which it purports to be, or that which Liebig has described and recommended, but is a very impure mixed product, little better than the rough quinoidine from which it is made.'"

Since the above lines were in print we have seen the specification of Mr Bullock's patent.

In the preparation of quinine, sulphate of quininc, or other saline compounds, after the separation of the crystalline sulphate or other salt, there remains a dark coloured mother-liquor, which being treated by the manufacturer with an alkali or alkaline carbonate, yields a precipitate, which, in drying agglutinates into a resinous-like mass, called by the manufacturer *chinoidine* or *quinoidine*, which is regarded as of little value. Sometimes the said mother-liquor is simply evaporated—the residue is then a mixture of chinoidine with an acid. "My discovery," says Mr. Bullock, "includes—

"First. The preparation of either of these products in a purified state, so as to enable me to reduce it to a powder, which I call purified chinoidine, and the forming of a solution of this in alcohol or other vehicle, and certain saline compounds.

"Second. The separation of amorphous quinine, and reducing it to powder, from the chinoidine or purified chinoidine by means of a solution in ether; and also the forming solutions of amorphous quinine in alcohol or other vehicle and saline compounds.

"Third. The substance left after digesting in ether, which having basic properties I call basic extract of bark. A solution of the same in alcohol or other vehicle and saline compounds of the same.

"*Preparation of purified quinoidine or chinoidine.*—I take three pounds of the residue of quinine manufacture, termed chinoidine (which should be soluble in alcohol and in dilute sulphuric acid and insoluble in water); nine ounces by measure of concentrated sulphuric acid diluted with one gallon of water, and dissolving the chinoidine therein, I then pass sulphuretted hydrogen through the solution for nine hours, for the purpose of precipitating metallic matters and other impurities. The mixture is then to be filtered through paper or other suitable material, as is well understood by chemists; it is then boiled to drive off any excess of sulphuretted hydrogen, and an alkali or alkaline carbonate added, to precipitate the chinoidine. I use commonly for the above-named quantity three pounds of carbonate of soda, dissolved in one gallon of distilled water. The precipitate obtained is then to be well washed with distilled water, and dried over a water-bath, and towards the conclusion of the drying, in order to dry it more effectually, I place it in a chloride of calcium-bath, and heat it a few degrees higher than 212°. It is then reduced to powder, and kept in well-closed bottles. This purified chinoidine may also be kept in solution in alcohol or other vehicle, or made into saline compounds. I prefer to sell it in a state of powder, it being more convenient in that form. I also prepare various saline compounds of purified chinoidine, by taking at the rate of one twelfth less than of the amorphous quinine hereafter explained, and mix it with acids as hereafter explained in respect to amorphous quinine. In some cases it is desirable to dissolve the purified chinoidine in alcohol before mixing with the acids. These saline compounds I prepare for sale, either in solution or by evaporating them to the solid state, and reduce them, when they will allow of it, to powder. In all cases, the preparation should be kept in well-closed bottles.

"*The preparation of amorphous quinine.*—I take three pounds of chinoidine as before, or in the purified state as above described (for this purpose it is best to use it before it is fully dried), and mix it well with twice its weight of pure sand, and digest in nine parts of ether (commonly known as sulphuric ether). The specific gravity of the ether I believe most suitable, being about ·735; I stir up the mixture three or four times during the digestion, which should continue twelve hours, and pour off the solution. To the residue I add nine pints of fresh ether, and proceed as before: I mix the two solutions, and allow them to settle; when perfectly bright, I pour off

the fluid from the sediment into a retort or suitable vessel, and distil off the ether by means of a water-bath. The substance left in the vessel is to be dried in the same manner as is directed for the purified chinoidine. To this residue I apply the term *Amorphous Quinine*. The saline compounds are prepared by taking one equivalent of an acid in solution, and dissolving in it an equivalent of the amorphous quinine, considering carbon 6, oxygen 8, hydrogen 1. I take one hundred and sixty-two parts of amorphous quinine to each equivalent of acid, all which is well understood by chemists, and I form basic neutral or acid salts, in the usual way.

"*Basic extract of bark.*—The residue left upon treating chinoidine with ether, in order to extract the amorphous quinine, contains also valuable medicinal matter. I take any given amount of this product, and calculating the amount of dry substance it contains, treat it with six times its weight of alcohol, generally preferring it 56° over proof. I decant the clear fluid, and evaporate it to dryness, in the same manner as with amorphous quinine. To this product I apply the designation *Basic Extract of Bark*, or I prepare this as follows:—To three pounds of the dry residue, as above, I add nine ounces by measure of concentrated sulphuric acid diluted with one gallon of water, and dissolve the same; and through this solution I pass sulphuretted hydrogen, and proceed in the same manner as when producing purified chinoidine, and in making solutions and saline compounds therefrom.

"Having thus described the nature of the invention and the manner in which the same is to be performed, I would have it understood that I do not confine myself to the details herein described so long as the peculiar character of either part of the invention be retained; but what I claim is,

"First, the manufacture of what I have called 'Purified Chinoidine,' by purifying and reducing that matter to a state of powder, as herein described; and I also claim the making alcoholic and other solutions of such purified chinoidine and also the producing saline compounds thereof.

"Secondly, I claim the manufacture of what I have called 'Amorphous Quinine,' by separating the soluble matter in ether from other matters, as herein described, I also claim the preparing alcoholic, ethereal, and other solutions thereof, and I also claim the preparation of saline compounds of the same.

"And, thirdly, I claim the manufacture of what I have called 'The Basic Extract of Bark,' by separating such product by ether from the soluble matter, and preparing such extract as herein described, and producing alcoholic and other solutions and saline compounds thereof."

["From the above specification of Mr. Bullock's patent it appears, that the substance which he has been selling under the name of *amorphous quinine*, he now proposes to call *purified quinoidine or chinoidine*. Had he adopted this course in the first instance, he would have escaped the criticism to which he has exposed himself, for offering to the profession a product, containing 30 per cent. of foreign matter, as the *pure alkaloid of the cinchona bark*.

"But the exclusive manufacture of *purified quinoidine*, or its combinations with acids, cannot be secured by this patent. Quinoidine and sulphate and muriate of quinoidine, as pure as any prepared by the patentee, have for many years been articles of commerce in this country, and may be found in some of the old price-lists of Messrs. Howard and Kent, of Stratford. The use of sulphuretted hydrogen as a means of purifying quinoidine is not new, but is of doubtful advantage.

"With this specification before the public, we presume that the patent *amorphous quinine* will in future be soluble in ether. On examining some of it, *recently* supplied by the patentee, we find it to be soluble, with the

exception of a slight residue, arising probably from the occurrence of a partial change during the processes of evaporation and drying."—Ed. of the 'Pharm. Jour.']

50. Valerianeæ. *Valerianate of Zinc.*—MM. Larocque and Huraut have published the following observations on the adulteration of this salt.

"For some time past a substance has been sold at Paris under the name of valerianate of zinc, of great beauty, and at a price defying all competition, which is nothing more than butyrate of zinc. This fraud, which we consider necessary to expose, is practised on such a vast scale, that at the present day nearly all the valerianate of zinc which occurs in commerce has nothing but the name and appearance of that salt.

"The butyrate of zinc indeed resembles the valerianate to such a degree in its physical properties, that it is impossible to distinguish them. Thus it occurs, like the latter, in the form of light, shining, brilliant white, pearly needles. With respect to their chemical properties, their distinction is scarcely more easy, unless recourse be had to very complicated operations, requiring the skill of experienced chemists; for beyond their slight solubility in water and alcohol, both, on being treated with strong acids, yield a volatile fatty acid of a strong and disagrecable odour, which forms with barytes a salt soluble in water and alcohol, possessing the singular property of rotating with rapidity on the surface of water, and which produces in neutral acetate of lead an oily precipitate, &c. Like the valerianate, the butyrate of zinc possesses a peculiar odour, which, although it differs very perceptlbly, is, nevertheless, not so marked as to be appreciable by persons little accustomed to handle these products.

"We thought these few details necessary to render intelligible what must happen, if, by impregnating the butyrate of zinc with essence of valerian, not merely its peculiar odour is entirely hidden, but it has acquired that of valerian itself; and we are strongly led to believe that the valerianate of zinc forming the subject of this note had undergone this treatment, for it is precisely owing to the odour of esscnce of valerian, which it disengages, that we were led to doubt its nature and submit it to examination.

"The process by means of which we succeeded in detecting the fraud is excessively simple. It is founded on the different action which the valerianic and butyric acids exert on a concentrated solution of acetate of copper. The characteristic reaction is extremely simple and decisive. From experiments made by one of us it results that, whilst butyric acid immediately forms a bluish-white precipitate in a solution of acetate of copper, which renders it turbid, valerianic acid, on the contrary, produces no perceptible change; but by agitation it is converted into greenish drops of an oily appearance, which are partly deposited, partly float on the surface of the liquid, and adhere to the sides of the vessel just like a fatty substance. These drops, consisting of the anhydrous valerianate of copper, persist from 5 to 20 minutes, and sometimes even more, and are then converted by hydration into greenish-blue crystalline powder.

"As these reactions are produced in a very marked manner only when the valerianic and butyric acids are pure or in a concentrated solution, it is therefore necessary to separate the acid of the salt under consideration. For that purpose 3 or 4 grams. of the valerianate are triturated with a little water, and then introduced into a tubulated retort, to which a small balloon, serving as recipient, has been adapted. Subsequently twice or three times the weight of sulphuric acid diluted with an equal portion of water, is poured upon the salt through the tubulature, the whole is agitated and then heated gently, taking care to avoid as much as possible any violent ebullition. Very soon a

liquid passes into the recipient, which consists of nearly the whole of the acid of the salt employed and a little water. It is this liquid which is subsequently used to determine by the above reaction the nature of the product.

"The distillation should not be carried too far, and a greater weight of the liquid than equals the quantity of valerianate employed should not be collected.

"We have examined several valerianates of zinc in this way, the quality of which was suspicious, and the results which we obtained were always negatived with respect to the action peculiar to valerianic acid; each time, on the contrary, a turbidness was produced in the copper solution. We have repeated these experiments with various specimens of valerianate of zinc, which we ourselves had prepared at different times, and the characteristic reaction of valerianic acid was constantly exhibited.

"We also ascertained whether the solution of acetate of copper would allow of detecting a mixture of butyric and valerianic acids, and the experiments undertaken with this view have yielded very satisfactory results. Thus we found that a mixture of these two acids in very different proportions produced in the acetate of copper the reactions peculiar to each, but the appearances are not exactly of the same kind as when the acids are taken separately. In the latter case the reaction is well-defined and immediate; on the one hand, formation of a precipitate and turbidness of the liquid —butyric acid; on the other, production of oily drops, which adhere to the sides of the vessel, with the solution becoming less transparent—valerianic acid. In the case of a mixture, on the contrary, unless the proportion of butyric acid is very considerable relatively to that of the valerianic acid, the results are not so quickly evident. At first the valerianic acid manifests its presence by the production of an oily drop, but the liquor does not become turbid; it is only after agitating with a glass rod for two or three minutes, that its surface, as well as the sides of the vessel and the valerianate of copper itself, is seen to become coated with pale blue crystalline needles of butyrate of copper, depending as to quantity on the proportion of butyric acid present. To avoid every cause of error in researches of this kind, it is necessary to employ a slight excess of the reagent, because valerianic acid displaces butyric acid from its combination with oxide of copper. This observation is important, for it will easily be conceived that the valerianic acid taking all the base to itself, it might readily happen that, in a mixture containing but a small quantity of butyric acid, this acid would remain free in the solution without producing the characteristic reaction.*

51. Compositæ.—*Artemisia vulgaris—Mugwort*†. All the species belonging to the genus Artemisia possess bitter and aromatic properties. This plant was employed at one time as an aromatic tonic, but it fell into disrepute, until revived in Germany in modern times, as a remedy in epilepsy. It has not, however, been much given as such in other countries of Europe or in the United States. The root is the part employed, which should be dug up in autumn, after the stalk has become dry, or in the spring, before the stalk has shot up. Burdach recommends many precautions in its preparation. To remove epilepsy, he found it most efficacious when given in the dose of a teaspoonful, from fifty to seventy grains, in warm beer about half an hour before the paroxysm. Should this be impracticable, it may be administered as soon as the patient can swallow. He must be put to bed immediately, be covered up warm, and allowed some warm small-beer to drink, so as to occasion diapho-

* Journ. de Pharm., June 1846. † Dunglison, Op. cit.

resis. This plan may be repeated according to circumstances. In general it may be sufficient to prescribe a drachm of the powder three times a day, gradually increasing the dose; or it may be given in infusion or decoction.

52. *Artemis. vulg.* rad. concis. ℥j, aq. Oiss, boil for half an hour; dose—half a teacupful every two hours in cases of epilepsy. It is to be feared, however, that the assertions of the German physicians are too strong, and that the advantages to be derived from the *Artemisia* in epilepsy have been exaggerated. Where there is no organic disease of the encephalon, substances which, like the *Artemisia*, are nauseous, bitter, and aromatic, may be productive of advantage as tonics and revellents; and the author (Dr. Dunglison) has seen one or two cases in which beneficial effects have resulted from its use. It has likewise been given in other diseases, in which aromatic tonics are indicated, but it possesses no virtues over others of the class.

53. *Eupatorium.**—Thoroughwort, or Boneset, is a plant common in almost all parts of the United States, inhabiting moist places, and flowering from the middle of summer to the close of October. The tops and leaves are officinal in the Pharmacopœia of the United States. No analysis has been made of it; but its medical virtues, which appear from the taste to consist in part of bitter extractive, are communicated to water and to alcohol. The virtues of *Eupatorium* as a diaphoretic are esteemed by some to be very powerful, and to succeed when other excitant diaphoretics have failed. Hence it has been given freely in acute and chronic rheumatism. The tonic properties which it possesses, at the same time render it especially adapted for cases in which a diaphoretic and tonic influence is demanded. In very large doses it may prove emetic. *Infusum Eupatorii*, infusion of thoroughwort. (*Eupator.* ℥j, aq. bullient Oj.) This should be taken warm and freely, the patient remaining in bed. It has been recently very strongly recommended by Dr. Peebles, of Petersburg, Virginia, in influenza, given so as to keep up a nauseant effect on the system.

54. The Asclepiadeæ† do not contain any plants officinal to the Pharmacopœias, but many which are possessed of useful medicinal virtues. *Cynanchum* (now *Solenostemma*) *Argel* has been employed to adulterate senna. *Cynanchum Monspeliacum* and *Periploca Scamone* are said to be used to adulterate scammony. *Scamone emetica* and *Asclepias curassavica* are emetic. *Tylophora asthmatica* has been considered an efficient substitute for ipecacuanha, and an excellent remedy in dysentery. *Hemidesmus indicus* is considered by the medical officers of the Madras establishment to be an efficient substitute for sarsaparilla in the treatment of syphilis, scrofula, and cutaneous affections. It is there usually called Country Sarsaparilla. It has a pleasant odour, which is compared with that of iris root, is useful as an alterative, and general improver of the secretions. It is imported into this country, and employed under the name of *Smilax aspera.* This was proved by Dr. Royle to be the above *Hemidesmus indicus.* (Proc. Royal Asiat. Soc. June, 1838.) So *Calotropis procera*, *atra*, and *mudar*, of the natives of India, has long been employed as an alterative in cutaneous affections, and even in incipient leprosy. Dr. Royle employed a variety named *C. Hamiltonii* by Dr. Wright, which is common in North-West India, and which the natives there employ medicinally for the same purposes as the former. He has prescribed the fresh bark of the root dried and powdered, alone and successfully in incipient cases of leprosy, and in other cutaneous affections, both in the Civil and Military Hospital at Saharunpore.

55. *Asclepias Tuberosa.*‡ *Butterfly Weed.*—The root of *Butterfly Weed* or *Plevrisy Root* is in the secondary list of the Pharmacopœia of the United

* Dunglison, Op. cit. † Royle, Op. cii, p. 430. ‡ Dunglison, Op. cit.

States. This species of Aselepias flourishes in every part of the United States, and flowers in June and July, the flowers being of a beautiful reddish orange colour. It is especially abundant in the southern states. The root, as seen in the shops, is large and irregularly tuberous, of a brown colour externally, and white and striated within. In its fresh state it has a nauseous sub-acrid taste. Its virtues are imparted to boiling water. *Asclepias Tuberosa* belongs, doubtless, to the class of excitant diaphoretics, and, in large doses, is said to be cathartic. It has been prescribed in catarrh, and in inflammatory affections of the chest in general, especially after bloodletting; and in consequence of its fancied efficacy in pleurisy especially, has received one of its appellations. The dose of the powdered root is gr. xx, to ʒj, taken three or four times a day, but this is not the best form as a diaphoretic. The decoction or infusion is generally employed for this purpose, in the proportion of one ounce of the root to a quart of water, the dose being a teacupful every three or four hours, taken warm, and the patient being kept in bed, and warm diluents allowed.

56. *Spigelia.—Pinkroot.**—Spigelia is the root of *Spigelia Marilandica, Indian Pink, Carolina Pink.* An indigenous plant of the states south of the Potomac, which grows in rich soils on the edges of woods, and flowers from May to July. It is collected in quantities by the Creeks and Cherokees, by whom it is packed in casks, or more frequently, in large bales weighing from 300 to 350lbs; that in the casks being preferred as less likely to be damp and mouldy. (Wood and Bache.) The dried root, as met with in the shops, consists of numerous, slender, branching, crooked, and wrinkled fibres, issuing from a short rhizoma. These fibres are from three to six inches long. Its odour is faint, and taste sweetish and slightly bitter. Its activity has been assigned by Feneulle to a brown bitter extractive, similar to that of the cathartic Leguminosæ, which, when taken internally, causes vertigo and a kind of intoxication. The virtues of spigelia are imparted to boiling water. The roots are sometimes mixed with those of a small creeping plant which twines round the stem. These are much smaller and lighter coloured, and should be separated before the spigelia is dried. Pinkroot is much used in the United States as an anthelmintic, and although cases are related in which it is said to have proved acro-narcotic, and even to have caused death, it is very extensively prescribed, and with entire impunity. Still it is well to bear in mind that such cases have been recorded, as well as the statement, that the acro-narcotic effects are less apt to occur when the medicine acts on the bowels or is combined with cathartics. Dr. Wood affirms that in the United States it stands at the head of the anthelmintics. It certainly is highly esteemed by many, but others have equal confidence in the chenopodium, and much more in the oil of turpentine and its combinations. It is scarcely used in Great Britain, although it is officinal in the Pharmacopœias of London, Edinburgh, and Dublin. The dose of the powdered root for a child a few years old is from ten to twenty grains, and for an adult from one to two drachms. This may be given every night, or every night and morning, for three successive days, and then be followed by a brisk cathartic; or it may be associated with calomel, jalap, or any of the cathartic powders.

Infusum Spigeliæ, Infusion of Pinkroot.—(Spigel. ℥ss, Aquæ bullient. Oj.) The dose of this infusion for a child a few years old, is fʒss to fʒj. for an adult; fʒiv to fʒviij, given in the same manner as directed for the powdered root, or an equal quantity of senna may be added to the infusion. A preparation is generally kept in the shops, which is said to be much prescribed by physicians, under the name of worm-tea, and which consists of pinkroot,

* Dunglison, Op. cit.

senna, manna, and savine, mixed together in various proportions to suit the views of the prescriber. (Wood and Bache.)

57. *Frasera. American Columbo.*—The root of *Frasera Walteri, American Columbo*, or *False Columbo*, is officinal in the secondary list of the Pharmacopœia of the United States. The plant is one of the most beautiful indigenous productions of the vegetable kingdom, flowering from May to July, and flourishing in the southern and northern portions of the Union, especially in Arkansas and Missouri. The root, it is advised, should be collected in the autumn of the second, or the spring of the third year, and before being dried should be cut into transverse slices. (Wood and Bache.) The dried root is generally in transverse circular segments, about an inch in diameter, and an eighth of an inch or more in thickness. Some years ago it was introduced into France, and sold for Columbo; but if attention be paid to the pieces, they will be found to be more uniform in their internal structure, and not to have the concentric and radiating lines which are generally seen in Columbo. They are of a purer yellow too, without a greenish tinge, and contain no starch. Frasera has the same properties as Columbo and the other simple bitters, and is applicable to the same cases. It is not, however, much used. It may be given in infusion (Fraser. ℥j, Aquæ bullient. Oj, Dose, f℥iss—f℥ij), or in tincture (Fraser. ℥j, Alcohol. dilut. Oj, Dose, f℥j—f℥iij), neither of which is officinal. Should it be desired to give the powder, the dose may be gr. xx to ℥j.

58. Convolvulaceæ.—*On the Preparation of Jalap Resin.* By E. Soubeiran.—"Four different processes have been prescribed for preparing the resin of jalap. The Paris Codex directs the root to be exhausted with alcohol of 0·863 spec. grav., which is then distilled, and the resin forming the residue of the distillation is washed and dried.

"It has been proposed to treat the jalap with alcohol of 0·921, following in other respects the method of the Codex. Apparently the two processes should give a similar definite result, the whole of the resin being equally dissolved, and the washing separating the extractive matters, which have been taken up in greater quantity by the weak alcohol. This, however, is not the case; and when the alcohol of 0·863 is replaced by alcohol of 0·921, the produce is diminished; the author lost in such a case one seventh. It is, therefore, advantageous to keep to the prescription of the Codex.

"M. Planche has described a process, which consists in exhausting the jalap by maceration in cold water, and then pounding in water; the resin adheres to the pestle; it is far less coloured than by the ordinary process. This process can only be applied to very small quantities of the root; it is impracticable with large masses, and in every case it yields but little product. This probably led M. Nativelle to modify it, taking advantage of the ingenious idea conceived by M. Planche, of removing the extractive matters by water before dissolving the resin in alcohol. M. Nativelle, after having exhausted the jalap by repeated boiling with water, treats it with alcohol of 0·921, and decolorizes the alcoholic tincture by means of charcoal. A very slightly-coloured resin is then obtained, which appears perfectly white when reduced to the state of powder; but the great objection in this case is also the loss of a great proportion of resin. The same jalap which had yielded 100 per cent. of resin by the process of the Codex, only yielded 64 by the process of M. Nativelle. Two causes may concur in producing this result—the strength of the alcohol employed, and the influence of the charcoal, which retains, as is known, a very large number of organic substances. It is especially to the animal charcoal that must be ascribed the decrease in the proportion

of resin obtained, as, in preparing it without the intervention of charcoal, its quantity amounted to 75.

"It is seen that the most advantageous process is still that of the Codex; it is very simple, and can be carried out by every chemist and druggist. It cannot be recommended too highly to chemists to employ and prepare themselves the resin of jalap, for this resin has not sufficiently marked characters to enable us to detect readily whether it has been adulterated." *

The following observations are taken from Dr. Royle's article on this drug:

"Several adulterations are met with, especially in continental commerce, as the roots of the *Ipomœa orizabensis*, called stalk or light jalap, but by Guibourt *Jalap fusiformis:* also a *False Jalap with a rose odour;* also the smaller roots of *Batatas Jalap* of Choisy (*Convolvulus macrorhizus* and *Jalapa* of authors), those of a *Bryonia*, of a *Smilax*, and of *Mirabilis*—are sometimes intermixed.

"Lately analysed by Guibourt, but without attempting to ascertain all the salts and principles, jalap was found to contain of resin 17·65 per cent., a liquid sugar obtained by alcohol, containing some of the deliquescent salts 19·00, brown saccharine extract, obtained by water, 9·05; gum, 10·12; starch, 18·78; woody matter, 21·60; loss, 3·80=100. This, as M. Guibourt remarks, 'differs from the analyses hitherto given; but in the presence of sugar, which he supposes to be of the nature of cane sugar, approximates Jalap to Batatas and other jalap (as rose jalap) roots of the same family, which contain it. The cathartic properties depend on the resin; hence rectified spirit is the best solvent. Water takes up the gum and starch, with little of the active principle. Though jalap is apt to be attacked by insects, its virtues are not in consequence impaired, for they leave untouched the resinous part. This resin is of a grayish colour, opaque, brittle, acrid in taste, soluble in alcohol, a little so in ether, readily so in nitric or acetic acid, and in solution of potash. It is now often adulterated with guaiacum, which may be detected by the blue colour produced by nitrous gas, while ether dissolves it, but does not dissolve pure resin of jalap. Dr. Kayser has named this Rhodoretine, from its producing a red colour with strong sulphuric acid. He considers it composed of $C_{42}H_{35}O_{20}$.'"

59. Solaneæ. *Stramonium.*—Dr. Royle makes the following observations on the action and uses of this drug:—"By relieving pain it will induce sleep, and affects the constitution much in the same way as belladonna, in doses of the powder, gr. j—gr. v. In neuralgic and in rheumatic pains it has given relief, both when taken internally and applied externally. It has also been considered calmative in mania. In spasmodic asthma, smoking the leaf (gr. x—ʒss) often gives instantaneous relief, but it must be exhibited with care. M. Trousseau recommends its being smoked with an equal quantity of sage-leaves, in a roll of paper. In India I used to order it to be added to the ordinary chillum of tobacco, or the inhaling warm water in which datura-leaves had been infused. Mr. Skipton found fʒij of an infusion of the root (ʒj to aq. Oiss) of Datura fastuosa give great relief. But the most convenient practice is that of smoking the stramonium cigars, which are prepared by some chemists."

A tincture of stramonium (seeds ʒiv, proof spirit ʒxxxij) is officinal in the United States Pharmacopœia, and may be given in doses of ♏ x—fʒss, two or three times a day, or it may be rubbed along the course of a pained nerve.

* Journ. de Pharm., Sept. 1846, and Chem. Gaz. No. 96.

60. Laureaceæ. *On the Adulteration of Camphor by Sal-ammoniac.**—M. Gobis purchased a quantity of camphor, consisting of large pieces, and a considerable quantity, also, much bruised. Its dull and gray colour caused him to suspect that it was not pure. After examining it attentively, he observed that the large pieces had no peculiar characteristics, but that the small ones were formed of different layers, which were not of the same structure, or even colour. When submitted to the action of heat, they were completely volatilized, triturated with a few drops of alcohol, they were reduced to powder, but with great difficulty. They were then dissolved in about half their quantity, by weight, of alcohol, still, however, depositing a small quantity of a white precipitate, which, after being collected on a filter, and washed in a little alcohol, was dissolved in distilled water, and comported itself in the presence of tests like the hydrochlorates. Reduced to powder, and triturated with a small quantity of potash, the adulterated camphor gave out ammoniacal gas. It was, therefore, evident that it contained sal-ammoniac.

61. *Bebeerine. Greenheart Tree.*—A considerable quantity of wood, called *Greenheart*, is imported into this country for ship-building. It is large in size, heavy, hard, durable; takes a polish, but is apt to split, and is of different tints of olive-green, varying from pale to dark. Sir R. Schomburgh, Hooker's 'Journal of Bot.' Dec. 1844 (Brit. Assoc. 1845) has described the tree which yields the Greenheart *timber* of Guiana (called *Bebeera* by the Indians of Demerara, and *Sipeeri* by the Dutch colonists). It is a new species of the laurels, belonging to the genus *Noctandra*, and which has been named *N. Rodiei*, in compliment to Mr. Rodie, a late surgeon in the Royal Navy, who first, in 1834, directed attention to its valuable febrifuge properties, and indicated the presence of an alkali in the bark of this tree. Dr. Warburg also prepared what he called "Vegetable Fever Drops" from some part of this tree, which he distributed extensively, and which were favorably reported on by various medical officers. Dr. Maclagan read a paper on the subject before the Royal Society of Edinburgh, in 1843, which has been mentioned in a former Report. The bark of the *Bebeera* tree occurs in large flat pieces, is about four lines in thickness, heavy, and with a rough fibrous fracture, of a dark cinnamon-brown colour, rather smooth within, but covered externally with a splintering grayish-brown epidermis. It has little or no aroma, but a strong, persistent, bitter taste, with considerable astringency. These properties depend on the presence of an alkali, which has been called bebeerine; Dr. Maclagan first thought that there were two alkalies; but this, from his second paper, does not seem to be the case. It is contained also in the seeds, as is evident from Dr. Maclagan's analysis of the bark and seed:

	Bark.	Seeds.
Alkalies (not quite pure) .	2·56	2·20
Tannin and resinous matter .	2·53	4·04
Soluble matter (gum, lignin, salts)	4·34	9·40
Starch . . .	0·00	53·51
Fibre and albumen . .	62·92	11·24
Ashes (chiefly calcareous) .	7·13	0·31
Moisture . . .	14·07	18·13
Loss	6·45	1·17
	100·00	100·00

The tannin resembles that which has been found in the cinchona bark. Dr.

* Journ. de Pharmacie.

Royle has received fruits of the Bebeera tree from Guiana, which were stated to be those of the tree employed in making Warburg's Fever Drops. They are 2½ inches in length, and 1½ inches in breadth, and correspond with Dr. Maclagan's description. The alkali is separated from the rest of the bark by being boiled in water acidulated with sulphuric acid, as in the ordinary process for obtaining sulphate of quinine, and is then precipitated from the impure sulphate obtained by ammonia. The alkaline matter thus separated is, after washing with water, triturated with about an equal weight of freshly-precipitated and moist hydrated oxide of lead. The magma thus formed is dried over the water-bath, and the alkali is then taken up by absolute alcohol. On distilling off the spirit, the organic base is left in the form of a transparent, orange-yellow, resinous mass. This, on being dried, pulverized, and treated with successive portions of pure ether, is in great part dissolved in this fluid. The dissolved portion, on distilling off the ether, is obtained in the form of a translucent, amorphous, homogeneous, resinous-looking substance, of a pale yellow colour, and possessed of all the properties of an organic alkali. This is pure *bebeerine*, which does not crystallize. It is very soluble in alcohol, less so in ether, and very sparingly in water. Heated it fumes, and the heat being continued, it swells up, giving off vapours of a strong peculiar odour, and burning without residue. Subjected to the action of oxidizing agents, it gives, with bichromate of potash and sulphuric acid, a black, and with nitric, a yellow resin. It forms, with acids, salts, which are all uncrystallizable; with perchloride of gold, mercury, copper, iron, and platinum, it gives precipitates which are soluble to a certain extent in hot water and alcohol, but which, on the solution cooling, are not deposited from it in a crystalline form. Messrs. Maclagan and Tilley found it to be composed of carbon 71·92, hydrogen 6·49, nitrogen 4·75, oxygen 16·84=100, and that its formula is $C_{35}\ H_{40}\ N_2\ O_5$. Dr. Maclagan obtained some bebeerine from Warburg's Fever Drops.

Action, Uses.—Tonic, antiperiodic, febrifuge. From the original experiments of Mr. Rodie, and those made with Warburg's Fever Drops, there was little doubt of the bebeera bark being a powerful antiperiodic. These have been confirmed by the experiments of Dr. Maclagan, and of Dr. Watt, of George Town, Demerara, with the sulphate of bebeerine; and of Dr. Anderson, and others, at Kamptee, &c., in the ague and remittent fever of India; and by Drs. Bennett and Simpson, in periodic neuralgia. Dr. Christison has informed Dr. Royle that the sulphate of bebeerine has come into general use in Edinburgh as a tonic and stomachic, and also as an antiperiodic, in the very same diseases, and for the very same purposes, as the sulphate of quinine, and that it appears not so apt to occasion headache. He had employed it in a very severe case of periodic tic douloureux, and with complete success, exactly as if sulphate of quinine had been used. It is given in two or three-grain pills every hour, or three or four times a day, according to the case, so that ℈j, or so, may be given before the accession of a paroxysm, or it may be given in gr. x doses, morning and evening. Considerable improvement in the manufacture has been made by Mr. Macfarlane, of Edinburgh, who now prepares it in considerable quantities for medical use, in the form of sulphate of bebeerine.*

62. Corylaceæ. *On the preparation of gallic acid.*—Müller† recommends Braconnot's method for preparing gallic acid, modified as follows. He boils 16 ounces of coarsely-pounded so-called heavy blue galls three times with 8lbs. of water in a tin saucepan, strains the decoction, and lets it stand for four months in a covered earthenware pan, at a temperature of 100°-122°,

* Royle, Op. cit. p. 545. † Archiv der Pharm., xlvi, p. 153, and Chem. Gaz.

now and then replacing the evaporated water, and well agitating. The mould, as well as the crusts which formed, are after this time collected on a filter, slightly washed with cold water and dried, then boiled with four parts water, filtered, and the residue well washed with hot water. The crystals which separate from the filtered solution on cooling are separated from the mother-ley, slightly washed, dissolved in a little boiling water, and set aside to crystallize. The crystallized acid is collected on a filter, rinsed once or twice with water, dried, then digested for several days with 3 oz. of alcohol and 1 oz. of purified animal charcoal, heated to boiling, filtered, and evaporated at a very gentle heat. The still slightly brownish crystals are again collected on a filter, rinsed with spirit, dissolved in three parts of boiling water, and set aside to crystallize. The crystals now obtained are of a beautiful white colour, silky lustre, and perfectly pure. The mother ley yields on evaporation a small quantity of brownish-yellow crystals. The produce in beautiful white gallic acid amounted to $2\frac{1}{2}$ oz. In another experiment 3lbs. of galls yielded 8 oz.

63. Ranunculaceæ. *Cimicifuga.** *Black Snakeroot.*—"The root of the *Cimicifuga racemosa*, *C. serpentaria*, *Actæa racemosa*, *Macrotrys racemosa*, *Black Snakeroot*, *Cohosh*, *Cohort*, *Bugbane*, has been elevated, in the last edition of the Pharmacopœia of the United States, from the secondary to the primary list. The plant is indigenous in the United States, growing in shady and rocky woods from Canada to Florida. It yields its virtues to boiling water and to alcohol, and was found by Mr. Tilghman, of Philadelphia, to contain gum, starch, sugar, resin, wax, fatty matter, tannic, and gallic acids, a black and green colouring matter, lignin, and salts of potassa, lime, magnesia, and iron. Cimicifuga, in large doses, unquestionably belongs to the division of acro-narcotic poisons; but the author (Dr. Dunglison) has had difficulty in deciding as to what class of therapeutic agents it ought to be referred. It has appeared to him, however, to exert an action analogous to that of colchicum. The testimony of pharmacological writers, in regard to its action, is sufficiently unprecise, and this is shown by the following views of one of the most respectable of them, Dr. Wood, of Philadelphia. 'Cimicifuga unites, with a tonic power, the property of stimulating the secretions, particularly those of the skin, kidneys, and pulmonary mucous membrane. It is thought also by some to have a particular affinity for the uterus, and probably exerts some influence over the nervous system of a nature not exactly understood. Its common name was probably derived from its supposed power of curing the disease arising from the bite of the rattlesnake. Till recently it has been employed chiefly in domestic practice, as a remedy in rheumatism, dropsy, hysteria, and various affections of the lungs, particularly those resembling consumption.' Some years ago cimicifuga was largely employed in the author's wards in the Philadelphia Hospital, by two zealous resident physicians, Drs. E. A. Anderson, of Wilmington, N. C,. and Alex. Wedder, of Schenectady, New York, who published cases illustrative of its powers in the treatment of rheumatism, in the 'American Medical Intelligencer,' for January 1st, 1838, and like other acro-narcotics, when pushed so as to produce catharsis, and even slight narcosis, it certainly appeared to be of service in the acute forms. In its action on that disease it strongly resembled colchicum. It is probably by virtue of similar powers that it has been found beneficial in chorea. In some successful cases, published by Dr. Kirkbride, of Philadelphia, purging was premised; and general frictions with salt or the flesh-brush, and pustulation with croton oil over the spine, are considered by him of much

* Dunglison, Op. cit.

value in the chronic cases. All these agents operate as revellents. A recent writer, E. J. Wheeler, affirms, that by some eminent physicians it has been thought a good substitute for the ergot in parturition. It is stated, however, to be dissimilar in its mode of action, relaxing the parts, and thereby rendering labour short and easy; but evidence is required of its possessing any such powers; and still more of its being of any service in incipient phthisis, or in "acute phthisis, accompanied with much inflammation in the vesicular structure, or pulmonary mucous or serous membranes," as has been affirmed by a recent writer. The dose of the powdered root may be half a drachm to a drachm two or three times a day. It is most commonly, however, prescribed in decoction (*Cimicifug.* Contus. ℥j, Aquæ Oj. To be boiled for a short time. Dose, f℥j to f℥ij, several times a day.) The tincture is also given (*Cimicifug.* Contus. ℥iv; Alcohol Oj. Dose, grs. xx, three or four times a day.)

64. Chenopodiaceæ. *Chenopodium.** *Wormseed.*—The wormseed of the United States is the fruit of *Chenopodium Anthelminticum*, or *Jerusalem Oak*, the wormseed of Europe being the fruit of *Artemisia Santonica*, (Dublin College,) or of a variety of *A. maritima.* Dr. Pereira, however, affirms that the substance sold in Great Britain under the name of "wormseed," does not consist of seeds, but of broken peduncles, mixed with the calyx and flower-buds. *Chenopodium Anthelminticum* is an indigenous plant, which grows in almost every part of the United States, but especially to the south, being found in the vicinity of rubbish along fences, flowering from July to September, the seeds ripening in Autumn. These are small, roundish, light, of a very bitter peculiar taste, and of a disagreeable odour, which is possessed by the whole plant. Their properties are dependent upon a volatile oil separable by distillation with water. *Chenopodium ambrosioïdes*, an indigenous plant, is said to be used indiscriminately for it. The seed of the *Chenopodium* is one of the most powerful *Anthelmintics* in use in the United States; and the common mode of prescribing it to a child three or four years old is to mix one or two scruples of the powder with molasses, administering this for three nights in succession, and then prescribing a cathartic on the following morning.

Oleum chenopodii, or *oil of wormseed*, *wormseed oil*, is officinal in the Pharmacopœia of the United States. It is of a bright yellow colour when freshly distilled, but becomes darker by age. It is administered in the same manner as the powder, in the dose of four to eight drops. It may be mixed with sugar or molasses.

65. Amygdalaceæ. *Prunus Virginiana*,† *Cerasus Seratina*, or *Cerasus Virginiana.*—An indigenous tree which is common throughout the United States, yields the officinal wild cherry bark. On the banks of the Ohio it is a much larger tree than in the eastern states. The inner bark, which is the part of the *Prunus* employed in medicine—as met with in shops—is in pieces of various sizes, of a bright cinnamon colour, brittle, and readily reducible to powder, which is of a fawn colour. The taste is agreeably bitter, and aromatic, with the flavour of the bitter almond. Its virtues are readily communicated to hot or cold water; but they are impaired and the flavour injured by decoction, partly in consequence of the volatilization of principles on which they are dependent, and partly of a chemical change effected by the heat. (Wood and Bache.) On distilling the same portion of water successively, from several different portions of the bark, a volatile oil, associated with hydrocyanic acid, was obtained by Mr. W. Proctor of Philadel-

* Dunglison, Op. cit. † Ibid.

phia, the former having properties analogous to those of the oil of bitter almonds, and, like it, not pre-existing, but resulting from the reaction of water upon amygdalin. The medical virtues of *Prunus Virginiana* are those of a tonic, and also of a sedative, owing to the hydrocyanic acid which is formed, the tonic virtue being dependent upon the bitter principle, and it has been suggested, on phloridzin, which it has been presumed exists in it. In the States it is much prescribed in the debility accompanying phthisis, in which it has been supposed to act as a sedative on the accompanying hectic, whilst at the same time it impresses a tonic influence on the stomach. It need scarcely be said, however, that but little even temporary benefit can be expeeted from it in such cases, which when in their confirmed stage proceed onward to their fatal termination unmodified, perhaps, by any agency. In many of our hospitals the prunus is a routine prescription; but although the author has carefully watched its effects, he has not been able to say that any evident relief was afforded by it. He has certainly never witnessed the sedative action that has been ascribed to it. It may be given in all cases in which a mild unstimulating tonic is needed. As in the case of other bitter tonics, the infusion is a better preparation than the powder, but should it be desired to exhibit the latter, the dose may be from ℥ss to ℥j. *Infusum Pruni Virginianæ*—infusion of wild cherry bark. (*Prun. Virginian.* cont. ℥ss, aquæ Oj.) Cold water is used in the preparation of this infusion to avoid the disengagement of any volatile matter which may be possessed of activity. The dose is f℥iss—f℥iij, three or four times a day.

66. Labiatæ. *Ballota Lanata** is a plant which grows exclusively and commonly in Siberia, where it has long had great reputation in dropsy. It has been of late years introduced into Russia, Germany, and Italy, but has not been employed in Britain or America. The whole plant is used, except the root; and ample testimony exists to show that it largely increases the urinary secretion, and has produced unequivocally good effects in dropsical cases. The form of preparation usually prescribed is the decoction. (*Ballot. Lanat.* ℥iss—℥ij, aquæ Oij, boil to a pint. Dose—a cupful night and morning.)

67. Meliaceæ.—*Azedarach.*—The bark of the root of *Melia Azedarach*, is in the secondary list of the Pharmacopœia of the United States. The tree termed *Pride of China*, *Pride of India*, *Bread Tree*, and *Poisonberry Tree*, is a native of oriental countries; but is cultivated as an ornament in various parts of the world. It is common in the southern states, but does not flourish further north than Virginia. The berries are reputed to be poisonous, yet they are said to be eaten by children of the south without inconvenience, and are considered anthelmintic. The bark of the root—the officinal portion—has a bitter nauseous taste. Its virtues are imparted to boiling water. It is regarded by many as one of the most valuable anthelmintics; and when given in large doses is unquestionably acro-narcotic. It is usually prescribed in decoction. (*Azedarach.* recent. ℥iv; aquæ Oij; cocque ad Oj, et cola. Dose, f℥ss every two or three hours, till it exhibits its effects on the stomach or bowels.

68. Sapindaceæ.—*Paullinia.*—This is an extractfrom a plant of the same name in Brazil; it is prepared by the Indians. A new alkali has lately been separated from it which, as well as the extract, is very bitter. Paullinia is prepared from *Paullinia Sorbilis;* and its active constituents appear to be tannic acid and bitter principle. In Brazil, paullinia is mixed with cocoa, and given as a tisane in diarrhœa and dysentery; and it has been used successfully in France in asthmatic cases, and in chlorosis, convalescence from

* Dunglison, Op. cit.

severe maladies, &c. According to Von Martius, an extract is prepared from paullinia sorbilis, which is called there *Guarana*, and is used in similar morbid cases.

69. Monesia.* It is only within the last few years that this substance has been known in this country. It was introduced from France with high encomiums from several distinguished physicians and *pharmaciens* of Paris. It is imported into France from South America in cakes or loaves weighing upwards of twenty pounds, which consist of an extract prepared in South America from the bark of a tree whose botanical name is unknown. The bark is said to be called by some travellers *Goharem*, and by others *Baranhem;* and the botanists who have examined it in South America, think that it is derived from a *Crysophyllum.* The bark is smooth and grayish like that of the plane-tree, except that it is much thicker; its sweet taste too contrasts greatly with the bitterness of the thin laminæ of the plane-tree. Monesia—the extract—is of a deep brown colour, very soluble in water, and of a taste, at first like liquorice, but soon becoming astringent, and leaving behind a well-marked and enduring acrid impression, which is experienced especially in the tonsils. When subjected to analysis by Persoz, it was found to contain tannic acid, rendering iron blue 52 per cent., gum or mucilage 10 per cent. and sweet matter 36 per cent. The bark and extract of monesia resemble those of the *Quillaia Saponaria*, but they are sensibly different. The action on the economy is that of an excitant, and as such it may be adapted for many pathological conditions in which such agencies are indicated. It has accordingly been prescribed in the various profluvia which are of an atonic character—in chronic bronchitis and bronchorrhœa, chronic diarrhœa and dysentery, leucorrhœa, blennorrhœa; and in asthenic hemorrhages, hæmoptysis, metrorrhagia, &c. The powdered extract, or an ointment made of it, has been applied to ulcers of a flabby and unhealthy character, and like every new subject brought forward with lofty pretensions, it has been employed in affections of a heterogeneous character. It is unquestionably entitled to attention as an astringent, but already it has almost passed into disuse. Monesia is generally given in pills, in the quantity of from 12 to 40 grains in the twenty-four hours, the medium dose being 15 or 20 grains taken at twice or thrice. A *Syrup of Monesia* may be made of six grains to the ounce of simple syrup, which is adapted for children. A *Tincture of Monesia* (Mones. gr. xxxij, alcohol dilut. f℥j) may be given in the dose of f℥j to f℥ij in any bitter or astringent infusion. It may also be prescribed as an injection in the quantity of f℥j to f℥ijss to 6 fluid ounces of water. An *Ointment of Monesia* to be applied to ulcers may be composed of ℥j of *Monesia* to ℥vij of *Lard* or *simple ointment.*

70. Algæ.†—*Sea Weeds.*—Several of the algæ abound in gelatinous matter, as the Ceylon moss, prepared by Mr. Previté, and respecting which several favorable testimonies have been given, and which is stated to contain from 54 to 63 per cent. of jelly. This appears to be, as stated by Dr. Lindley, a species of *Gracillaria*, as the edible birds' nests are composed of, one collected by swallows. A *Gelidia* from Ceylon, is in Rottler's Herbarium, as yielding jelly; so *Chondrus crispus*, or the Carrageen moss of Ireland, has of late years been introduced as a nutrient and demulcent, and used both in the form of decoction and of jelly. *Gigartina Helminthocorton*, or Corsican moss, is officinal on the Continent as an anthelmintic. It probably acts like cowhage, as a mechanical irritant, from the fragments of numerous corallines mixed with it. (v. Fee and Merat and De Lens.) Some species of *Porphyra* and *Ulva* yield the laver, which is used as an article of diet, as laminaria is in Lapland. Some sea-weeds are employed as manure for land; some are

* Dunglison, Op. cit. † Royle, p. 630.

burnt for kelp, or impure carbonate of soda, but which is now chiefly valuable on account of the iodine it yields, on which account seemingly a laminaria from the China Seas finds its way to the foot of the Himalayas, where it is employed as a cure for goitre.

71. Miscellanea. *Pettenkofer's adhesive plaster.*—Pettenkofer employs the oxide of calcium (lime) instead of the oxide of lead, the former being perfectly harmless, while the latter is sometimes injurious to the system: hence, instead of an oleate and margarate of lead, he obtains an oleate and margarate of lime. The lime-soap is, however, only the vehicle for the adhesive material—boiled turpentine. Turpentine purified in this manner is very adhesive at the temperature of the skin, no longer emits any volatile oil, and is perfectly insoluble in water. One part of lime-soap is mixed with half a part of turpentine, and with one eighth of tallow. These must be boiled in water till they fuse into a homogeneous mass, which must be subsequently treated with cold water. If any fragments of the lime-soap remain undissolved, the mass must be strained through a woollen cloth. In boiling water the lime-salt does not fuse, but merely softens, but in boiling turpentine it dissolves perfectly and readily. On cooling, the turpentine and the lime-salt dissolved in it, solidify together.

To prepare the lime-soap mix ℥j-℥ij of freshly-burned lime, ℥vj of water, ℥vj of olive oil, and expose them to a temperature of 200-212° F., stirring them with a wooden rod, and occasionally replacing the water lost by evaporation. In the course of from eight to twelve hours a yellowish white lime-soap is formed, which must be removed from the water and dried.*

The medical and surgical uses of *Gutta Percha*, and of Mr. Markwick's epithems, will probably be noticed in our next Report.

We cannot conclude this Report without directing the attention of our readers to the very beautifully got-up 'Manual of Materia Medica and Therapeutics,' by Professor Royle, of King's College. The amount of matter that we have extracted from it in the preceding pages affords the strongest evidence we can give of its great value.

* Buchner's Repert. Vol. xliii. No. 1.

[We regret that our space obliges us to omit the following papers, which had been noticed in Dr. Day's Report:—

"On the Volatile Oils of Cruciferous Plants." By M. Pless.

"Observations on the Properties, &c. of Coffee." By M. Payen.—Ed.]

VII.

REPORT ON PUBLIC HEALTH.

BY WILLIAM A. GUY, M.B. CANTAB.

Professor of Forensic Medicine, King's College, and Physician to King's College Hospital, &c. &c.

In resuming the analysis of the evidence, laid before the Health of Towns' Commission, the plan adopted in the first Report of noticing briefly the evidence of witnesses not belonging to the medical profession, and of giving more space to the information communicated by medical men will be continued.

Samuel Mills, esq., and Mr. John Roe, the Surveyor of the Holborn and Finsbury district of the Commissioners of Sewers were the first witnesses examined after Mr. John Newman, whose evidence finishes the last Number of the 'Abstract.' Much interesting and important information respecting the existing state of the sewerage in the Holborn and Finsbury district, and the great improvement introduced of late years, especially the system of flushing, will be found in the evidence of these gentlemen which extends from p. 124 to p. 137. The advantages of the system of flushing are thus explained:—The great principle intended to be carried out is, that instead of occasional cleansing, as formerly, the sewers should, when once cleansed, be kept free from deposit. The pecuniary saving, elsewhere stated at two thirds of the total expense previously incurred "is, I consider the least advantage of this mode of cleansing; the great points attained are the avoidance of all accumulations of filth in the sewers, and the stirring up in removal, and consequent disagreeable effluvia, is also avoided; the streets and pavements are undisturbed; the men engaged in cleansing sewers have a more healthy employment than heretofore; private individuals are saved from the annoyance of their drains being choked; and as this plan of flushing affects the health and cleanliness of the inhabitants, the accomplishment of it, on a general and systematic principle, should be deemed of the utmost importance." The following extract from Mr. Roe's evidence places in a striking light the sanatory effect of a system by which the accumulation of deposit is prevented. "I have known a man, who in opening a small sewer in White Horse court, Cow Cross, the moment he had opened it and arrived at the deposit, was taken ill immediately and obliged to go home, and he was ill for a month with fever. The men in many cases, have been afflicted with dysentery." With the necessity of removing these deposits, the danger of working in the sewers has ceased. It may be well to state that Mr. Mills has noticed that the contents of sewers which come in contact with churchyards are peculiarly offensive. It appears that the offensive drainage of the churchyard percolates through the sides of the sewer, and gives to its contents this unusually offensive odour. This percolation of water through the walls of sewers

accounts for the effect which the sinking of sewers below the level of existing wells has upon their supply of water.

John Stevens, esq., an architect, the next witness, gave some important evidence on the subject of sewers, condemnatory of the form of sewer in use in the Westminster district (a sewer with upright sides) on account of its insecurity in wet ground, and its costliness. The great expense entailed on the owners of houses by the partial operation, stringent requirements, and imperfect powers of the commissioners of sewers; and the insurmountable obstacle opposed to the drainage of the poorer districts and inferior class of houses, by the expense of sewers of an unnecessary size, is clearly shown. For a house costing £50, the expense of sewerage according to existing regulations will be £6, whereas a sewer of half the required size, but double the efficiency, could be constructed for £3. The charge for uniting the house drain with the sewer is also shown to be four times greater than it should be. Strangers who have heard of the excellent drainage of London will be surprised to learn that "in the neighbourhood of Clements Inn, though situated under the most favorable circumstances for drainage, being on a declivity towards the river, very few houses have drains; they have cesspools in the centre of the houses."

[It may be well to add that the inhabitants of Long Aere, though most anxious for efficient drainage have not been able to emancipate themselves from their cesspools, though the property is chiefly held by wealthy noblemen and public bodies, because the Commissioners of Sewers have no power to construct a new sewer, but only to keep in repair those already in existence.]

The importance of the system of flushing adopted in the Holborn and Finsbury divisions is strongly insisted on, and it is stated that if that system were in general use, all gully-holes might be dispensed with.

[The justice of this opinion is now amply proved by the result of the analysis of sewer-water lately submitted to the Select Committee of the House of Commons on Metropolitan Sewage Manure, by Professors Brande and Miller. The recent sewer-water is shown to contain little or no sulphuretted hydrogen, the odour being due solely to animal matter, which though somewhat offensive to the nostril, is not highly diffusive, and in all probability perfectly harmless.]

The offensive and injurious properties of the gases issuing from dead bodies in a state of decomposition, and in that state exposed to the air, is shown by the witness in the case of some excavations made for a sewer near St. Clement's church, in the Strand. The men fell down at their work, and lime was obliged to be largely used to disinfect the air.

The next witness examined, Edward Cresy, esq., is of the same profession as the preceding. He insisted strongly on the necessity of surveys by skilled surveyors, on the value of the egg-shaped sewers; on the importance of the system of flushing; on the use of glazed pipes for house drainage; on ventilation by means of flues; on the value of the refuse of towns, and its application to agricultural purposes; on the economy and convenience in new streets of sub-ways, to prevent the necessity of continually taking up the pavements; and on some other matters already adverted to in the evidence of former witnesses. The use of glazed earthenware pipes for house drainage is enforced on high and ancient authority. "The whole of the Colosseum at Rome was drained in that way from top to bottom. The earthenware pipes still exist in the wall, 160 feet in height; and they are carried into drains of the shape described, something like the section of an egg. There are many thousand feet of them still remaining; and you see them also in the baths of Titus, and the

baths of Caracalla that remain. There are also many instances here, in old houses that were left after the fire of London. Earthenware pipes were fitted into a receptacle at the bottom of the privies." The diameter of those at the Colosseum was about five or six inches, and the material was something like that of soda-water bottles. It appears that these partially glazed pipes were used to convey excrementitious matters. A quotation from Vitruvius shows that the Romans were alive to all the advantages of these glazed pipes, and that the objection to lead pipes, on the score of their poisonous properties, was well understood. But it is not merely in this matter of house drainage that the Romans set us a good example. They were too wise a people to suffer their towns to grow into huge brick-and-mortar accidents, or to leave even their situation to chance. Mr. Cresy thus does justice to their wise and humane consideration. "Vitruvius," he says, "recommends the avoiding the neighbourhood of marshes, that the city may not be subject to fogs or unwholesome exhalations. Great circumspection was used in the choice of a site for a city, and one of the methods adopted, previous to the forming of an encampment even, was the institution of religious rites, when the livers of the victims sacrificed were carefully examined, and if they were found diseased, others were subjected to the same test, in order to prove whether the unhealthy appearance resulted from accident. If the greater number of experiments proved healthy, it was considered that the water and soil were salubrious. When the external walls were built, the next object was the best means of disposing of the area between them; the streets were set out to exclude winds injurious to comfort, and all the sewers and drains were well considered. Their public buildings were established in convenient quarters, and their foundations made adequate to bear the weight placed upon them. Laws were established which prevented individuals from doing anything which would interfere with the public health or enjoyment. These were the first and chief considerations. Every man in Rome had a cistern, and a constant supply of water for domestic purposes, as well as drains into the common sewer, which was discharged into the Tiber; and the whole was under the control and management of proper officers." With the exception of the discharge of the refuse into the Tiber, this was a system worthy of all imitation.

Mr. Hertslet, the clerk to the Commissioners of the Westminster District of Sewers, and Mr. J. Dowley, were the next witnesses examined. Their evidence is chiefly valuable for some papers put in by them, and forming a part of it. The first paper is a report of a meeting of the chairmen of the several commissions of sewers proposed to be included in the Metropolitan Sewers Bill, brought into the House of Commons, a few years since, by Mr. Ward. It appeared to the said chairmen, "that uniform powers for working the several commissions will facilitate the proceedings of the inferior courts of sewers, and be highly advantageous to the public. That the amendments required in the present law of sewers, as applicable to the metropolis, appear principally to be, 1, to give increased powers to construct new lines of sewers, and to compel owners or holders of land to form and construct sewers. 2. To compel the owners or occupiers of houses and buildings to make communications with the public sewers for their premises, for the purpose of discharging their drainage, for the preservation of the general health of the inhabitants. 3. To give enlarged powers to the commissioners to prevent encroachments upon, to abate nuisances in, and to remove obstructions from the public sewers, and to repair, maintain, and raise the banks, walls, and defences. 4. To enable the commissioners to rate all persons and property within certain limits, to be ascertained by the presentment of a jury. 5. To authorize the commissioners to amend rates, give relief in respect of property

unoccupied or unproductive, and to admit compositions for property of small annual value." The diminution of the number of commissioners (there are no less than 220 in the Westminster district!) might have been safely recommended, and would not have exhausted all the desiderata. The other paper is both more interesting and more important in a medical point of view. It is a statement of the result of an inquiry made at the request of Sir Anthony Carlyle, in the year 1831, for the purpose of ascertaining whether men employed in cleansing the sewers, and in emptying cesspools, were particularly affected by putrid fevers or bowel complaints, and is signed by Mr. John Houseman, the then clerk of the Westminster Commission. "The number of men employed and examined was 45, of ages varying from 24 to 60, and of the average age of 39 years and 2 months, and who had been at work for periods ranging from 5 to 22 years. Two had worked in the sewers 22 years; 2, 21 years; 1, 20 years; 4, 17 years; 1, 16 years; and 4, 14 years. Two of the number are stated to have had putrid fever, which was caught in the one case from a bed-fellow, and in the other occurred while working in the Ranelagh main, and casting out soil, dead dogs, &c." In this last case the disease spread to the wife and two children, of whom one died. In three instances again, flux is recorded, accompanied in one of them by swelling in the throat. Catarrh, rheumatism, and slight diarrhœa, are mentioned as of common occurrence; the catarrh, in one or two cases, terminating in prolonged inflammatory or febrile attacks. Five out of the 45 workmen are stated to have been sick with the stench. Accidents of a different kind are of much more frequent occurrence. Thus no less than 21 had been wounded more or less frequently by broken glass in the sewers; five had been burnt by gas, and two by foul air. To this statement it is necessary to add Mr. Hertslet's testimony to the entire immunity of these men from cholera; and, if all the facts thus brought together are carefully considered, the conclusion seems inevitable that, as far as so small a number of instances may be trusted, there is no sufficient evidence of the unhealthiness of the occupation. Till a more extended inquiry and an accurate comparison with some healthy standard of out-of-door occupation shall have been instituted, we are bound to suspend our judgment on the effect on health of this employment in the sewers. There is every reason to believe that if the sewers were well supplied with water, and their contents in constant motion, the occupation would be as wholesome as working in a stream of pure water; for, as has been already intimated, the recent sewer-water contains scarcely a trace of sulphuretted hydrogen. Mr. James Creevy, nightman, of Drury-lane, also furnished a report of the sanatory state of his workmen, nine in number; of whom one was 66 years of age, and had been continually employed at night-work for 33 years, and another 60 years of age. None of these men had been ill at their work, though six out of the nine were hard drinkers, and the remainder moderate ones. Mr. Creevy has been 25 years in business, but he never knew any of his men to be ill at the regular night-work. Almost all of his men have been blind for a day or two after cleansing very foul privies, or barrack privies. He says that his workmen all drink gin and smoke tobacco at night-work, and that he thinks that nightmen have better health than most labouring men. Mr. Creevy says he was employed to empty two cesspools, or receptacles for decomposed flesh, at the anatomical school in Windmill-street, which contained about 40 tons. All his men came home sick. He had them all washed with warm water, and made them gargle their throats with warm water and vinegar, except one, who went home without taking this precaution; he was ill a week in consequence.

Some interesting information on this subject of the health of men working in the sewers will be found in the evidence of the next witnesses, W. Nottidge,

esq., Chairman of the Commission which embraces, among other districts, Deptford, Rotherhithe, Bermondsey, Newington, Lambeth, and the five parishes of the borough of Southwark; and Mr. Beriah Drew. Mr. I'Anson, one of the surveyors, reported, at the time of the cholera, "that excluding those men, very few in number, who have not been more than a year in the employ of the Commissioners in the Southwark division, their average age is 45, and the average age of service 19 years, a clear proof of no very predisposing cause of mortality arising from their occupation." This statement calls forth from the Commissioners the question,—are you aware that the average duration of life of working agricultural labourers above 21, including all classes, is about 55 years of age? This question, though it seems a pertinent one is really irrelevant, for Mr. I'Anson spoke not of the average age at death, but of the average age of men living and at work, and he was justified in considering 45 years as a good average, and as far as it goes, in favour of his opinion, that the occupation of men working in the sewers is not injurious to health. That a mean age of 45 does afford a presumption in favour of Mr. I'Anson's opinion will be seen by turning to a table at p. 347 of the Report, compiled by the author of the present analysis, from which it appears that the average age of 45 pressmen working in printing-offices was 34 years, and that of 197 compositors, 28 years. The average age of the 45 men employed by the Westminster Commission was 39 years 2 months, being five years more than that of the same number of pressmen. The following fact mentioned by Mr. Nottidge, seems to prove, that though the emanations from the sewers may not be injurious to health, the dampness occasioned by defective drainage is productive of disease. "My premises," he says, "were surrounded by a sewer which received the drainage of several fellmongers' yards. I lived thirty years near that spot, and upon the borders of this sewer were a vast many houses, and their poor inhabitants, almost always in the spring of the year, when the first warm weather came in, if it was a damp season, used to be subject to swelled faces and sore throats to a very considerable extent. Now that the sewer has been arched and the drainage made better, you very seldom see anybody with their heads tied up in that district." The witness gives a very sufficient explanation of the attacks of quinsey to which his neighbours were liable by stating that "the houses were so immediately upon the bank of the sewer that all the under-floors were always damp, and when the warm weather set in in the spring, they felt the ill-effects of this." The questions addressed to Messrs. Nottidge and Drew by the Commissioners with a view of eliciting their opinion on the effect of defective drainage upon health, contain some valuable quotations from the evidence of medical men resident in the Southwark district of sewers. The medical officer of St. Saviour's Union, in answer to the question, "What is the state of the sewers for the houses of the poorest classes of the population in your district?" says—"They are in a dreadful condition. On one side of Broadwall, at the back of the houses, there is an open sewer into which the privies empty themselves. There is a second open sewer situate between Hatfield-street and Brunswick-street which extends its course through Brunswick-place; and there is a third open sewer in Boundary row, all places thickly inhabited. These sewers are the receptacle of all kind of refuse, such as putrid fish (thrown in by the costermongers living about the New-Cut), dead dogs, cats, vegetables, &c. These two latter sewers also receive the soil from the privies of the houses situate near them. All the sewers are always offensive, but disgustingly so at particular seasons." These sewers are only emptied once or twice a-year. In answer to the question, "What is the general state of health of the people exposed to the effluvia from the open sewers?"

the same gentleman states, that "low and malignant fevers are much more frequent and fatal in their effects in these localities than in the other low neighbourhoods better situated. It is not uncommon to have two or three consecutive cases of fever in the same house; and year after year the father or the mother of large families is carried off by the frequent occurrence of the disease." "Malignant cholera commenced in this locality, and spread to a much greater extent on the line of these sewers than in the other poor densely inhabited places." "In Brunswick place, where the disease first began, five fatal cases occurred in one house (here the open sewer runs within two yards of the houses): and in many instances in the direction of the ditches, in a better class of houses, two or three cases terminated fatally from malignant cholera in the same dwelling. There are other diseases produced by the malaria emitted from the decomposed refuse in these open sewers." Mr. Clarke, the medical officer of St. Olave's Union, says, that the residences of the poorer classes in his district are filthy in the extreme. The chief drainage of the district inhabited by the poorer classes is by uncovered sewers, which are a sort of ditches, very sluggish, and emitting constantly most offensive odours. The line of houses where fever prevails at some periods often marks the line of defective drainage and the open sewers. "I believe I had under my own treatment the first cases of real cholera that occurred in London. There were one or two cases which were said to have occurred at Shadwell or Wapping; but the first cases, I believe, occurred in this parish. The cholera cases principally occurred in the houses near to, or over the open sewers; out of upwards of 400 cases in the one parish, almost 200 perished." Mr. Clarke also attributes fevers of a low type, produced at particular seasons, when the atmosphere is close and damp, to the privies and cesspools which abound in the same district, and bears his testimony to the saving to the poor-rates which would accrue from an efficient cleansing of such places.

Mr. John Leslie, a commissioner of sewers for Westminster, in his evidence makes the following important suggestions—a diminution of the present preposterous number of commissioners; compulsory drainage of houses into the sewers; compulsory forming of sewers in small streets occupied by the poor; power to prevent cesspools being sunk below the level of the common sewers, or still better, their abolition; the introduction of a system of flushing; an ample supply of water to cleanse the sewers; a government survey of the entire metropolis; and the abolition of jury presentments.

The evidence of Mr. Jeremiah Little, a builder, engaged in building houses for the poor, is in many respects important. He states that the losses on the collection of rent of houses let at £20 and £30 a year is about one fifth; that the causes of this loss are—1, loss of work; 2, sickness and death; 3, frauds; that the loss from frauds is less than that from inability to pay, the working class being as willing to pay and as honorable as any other class; but when people are in work there is as much loss to the landlord from sickness as from any other cause; and he adds, "three out of five of the losses of rent that I now have, are losses from the sickness of the tenants, who are working men." The diseases to which the witness alludes as causing an interruption of work and of payment of rent, are fevers, nervous disorders, and debilitating sickness. Mr. Little's evidence on this head concludes with a statement very important both to landlord and tenant—"I have decidedly found that rent is the best got from healthy houses." The great liability to sickness is one cause of the high rents of the houses occupied by the labouring class. Mr. Little points out the following additional causes:—The obligation to build sewers of double the size required, the high fee extracted by the commissioners for uniting the house drain with the sewer, (a cost four times

larger than it need be,) the cost of water tanks or butts, lead pipes, and ball and cocks, rendered necessary by the present mode of supplying water to towns, the increased cost of fire insurance, and the exorbitant fee of the district surveyor. The following table in illustration of these increased charges is too important to be omitted :—

	£	*s.*	*d.*
Sewers £7 10*s.* instead of £4; entailing on the annual rent an excess of	0	7	9
Cost of inserting the neck of a private drain into the sewer, £1 1*s.* instead of 5*s.*, an excess of . . .	0	1	9
Private drains £3, instead of £1 10*s.*, an excess of . .	0	3	4
Water apparatus £4 instead of £2, an excess of . .	0	4	5
Water supply, annual, £1 6*s.* instead of 8*s.* 6*d.*, an excess of .	0	17	6
Surveyor's fee £2 2*s.* instead of 10*s.* 6*d.*, an excess of .	0	3	5
Fire-insurance risk 10*s.* instead of 2*s.* 6*d.*, an excess of .	0	7	6
	£2	5	8

Thus it appears that the immediate outlay of the builder is £17 or £18 instead of £8 or £9, and the increase of rent nearly £2. 6*s*; and this, as is justly observed, "for an administration which produces drains and openings into houses and sewers, which emit pestilential smells; water which is sometimes complained of as bad, and scanty in supply for fires." To these large items it is calculated that 10*s.* a year must be added for loss of rent by sickness, which raises the annual increase of rent to be paid by, say four, tenants, to £2 16*s.*, or 14*s.* a year by each, which gives a weekly increase of 3¼*d.*, or exactly a farthing less than the weekly payment per house, which has been calculated as requisite to furnish ALL the appliances of decency and health to the inhabitants of large towns under a truly wise and economical system!

The evidence of Lieut.-Col. Gant and Mr. J. W. Unwin presents no point of interest. That of Mr. Joseph Daw, clerk to the Commissioner of Sewers for the City of London, is, in itself, equally unimportant, but for some facts embodied in the questions addressed to him by the commissioners, and furnished by medical men resident in the district. It appears from the statement of one medical man that "there are some districts which are imperfectly drained, where the cesspools are suffered to overflow and run along the kennels at the sides of the streets, causing fetid and deleterious exhalations; and that these places are seldom without fever for any length of time." Another medical man, that the line of habitation badly cleansed "almost formed the line of cholera cases;" and that nine tenths of the diseases come from these filthy places. A third medical man bears satisfactory testimony to the improvement of health which follows the substitution of the water-closet for the cesspool.

The evidence of the next witness, Mr. William Baker, jun., clerk to the Commissioners of Sewers for the Poplar district, is chiefly remarkable for the favorable opinion expressed of open sewers well supplied with water, in places not very densely peopled, and for the statement that the health of his district in which such open sewers abound is very good.

From the evidence of Dr. Robert Willis a few useful facts may be gleaned, relating chiefly to the diseases and mortality of children. Some rough inquiries made at the Royal Infirmary for children establish 35 per cent. as the rate of mortality under the age of puberty, and two years as the interval between the birth of one child and another. In the course of eleven years, each mother, one with another, was found to have had five children. Some

very just animadversions are made on the custom so common among the poor of abandoning their own children to act as wet-nurses to the children of those in better circumstances. The consequences are very generally fatal. Dr. Willis also comments on the apathy with which the poor look upon the death of young children, and the religious considerations by which they console themselves. In speaking of ventilation he reminds us of the impure state of the air in crowded drawing-rooms, in milliner's workrooms, and in tailors' workshops, and of the obstacles which the workpeople habitually place in the way of all attempts to supply them with pure air. We are also indebted to Dr. Willis for reminding us of a wholesome practice of his old teacher, Dr. Gregory of Edinburgh, who, in visiting the poor, used often to preface his prescription by breaking with his walking-stick a pane or two of the window, which he made good again at the end of the illness.

Mr. Richard Kelsey, surveyor to the Commissioners of Sewers, for the City of London, bears testimony to the inveterate habits of filth of the inhabitants of the lower class of streets and houses. "There is more difficulty," he says, "in getting those people to be clean than you can conceive." Their carelessness and propensity to mischief are also illustrated by the impediments which have been found in the sewers: in one sewer was found a part of a bedstead, in a drain a butter-firkin, and in a sewer which passed under a church-yard, several coffins. "It was discovered that they had buried the beadle of the parish in the sewer. In Cripplegate churchyard, my inspector discovered in his explorations that the sewer had been broken in, two ledges (i. e. flat tomb-stones) placed upright at each end, and some six or seven coffins deposited, some flat, some endways." In consequence of the ill-usage to which the drains and sewers are subject, Mr. Kelsey lays it down as a first principle, "that no common sewer should be so small that an ordinary sized man could not get in to cleanse it," and he gives the following measurements as the result of experiment: a height of 1 foot 11 inches will just allow a man of ordinary size to squeeze through on hands and knees; 3 feet 3 inches will admit him crouching, and 4 feet stooping. He, therefore, lays down the following dimensions: not less than from 2 feet 4 inches, to 2 feet 6 inches for a man to crawl through, 3 feet 6 inches for a man to crouch through, and 4 feet 4 inches to 4 feet 6 inches for a man to stoop through; and as few men are less than 21 inches across the shoulders, two feet is the least width in which a man can work effectually. The smallest *common* sewer, therefore, ought to be at least 30 inches by 24 inches, and the smallest *public* sewer ought to have a height of at least 4 feet 2 inches.

From the evidence of J. T. Mitchell, esq., the medical officer of the Union at Lambeth, we content ourselves with extracting the concluding passage. "A good drainage, and a constant and abundant supply of good water from cisterns, either in courts or single houses, are essential to the health of all towns, especially to those built in flat districts. Many parts of the district of Lambeth under my professional care, as medical officer of the Union, are very deficient in both of the above particulars, in which some early improvement ought to be made, as the poor, more or less, suffer in their health therefrom." "In some streets where there are courts or small gardens attached to the backs of the houses, the ground is quite sodden, and at the time of rain, overflowing with the numerous cesspools, which have from time to time been made to allow the water to soak away."

Mr. Jeremiah Long, a builder, and largely engaged in the management of house property, points out the advantages which would attend the laying down of a general system of levels, and shows the imperfect state of the drainage and cleansing of the district of Spitalfields. Six tenths of the

houses are undrained, and the back streets, instead of being cleansed once a week, are cleansed only once in three months. He has tried earthenware pipes, from four to six or nine inches diameter, for house drainage, but was obliged to abandon them in consequence of the tenants having broken them in digging. He also objects to their use in paved streets, under the impression that it would be necessary to take them up to cleanse them, when they would be subject to be broken. The witness also shows the inconvenience of the present intermittent water supply; the water being on only during about two hours on alternate days, some member of the family must remain at home to secure the necessary supply. The importance of open spaces for exercise and amusement in crowded neighbourhoods is insisted on as tending to improve the health of the people, to promote cleanliness by leading them to take more pride in their dress, to wean them from the public-house, and to save money, now spent in expensive trips to Hampton Court and other places in the neighbourhood of London. The influence of the means and appliances of decency on the labouring class is thus stated. "Our labourers where they can get a comfortable home and decent clothing, have a little pride about it; and they endeavour, after that, to keep clear of debt and bring up their families well."

Mr. Charles Brett, owner of a considerable number of tenements in Spitalfields and Bethnal Green, complains justly of the little advantage which his houses derive from sewers, though he pays sewer-rate on all of them, and the same rate has been paid for the last two centuries. The cleansing of the small streets and courts is also greatly neglected, as they are only contracted to be cleansed once a month. Much difficulty exists in obtaining efficient sewerage from the want of unanimity among the owners of property and because many proprietors wish to be benefited at any person's expense but their own." With regard to the effect on health of the neglected sewerage and cleansing, Mr. Brett says, that in some of the districts referred to, there is perhaps no period of the year free from fever; that sickness at all times forms an excuse for the poorer part not paying their rent, and a reasonable excuse; that the poor-rates are by the same means very much increased; and that good structural regulations and additional supplies of water, and better cleansing and drainage, would be good economy in respect of poor-rates. The condition of Wentworth street Whitechapel, and of the courts which branch out of it, may be judged of by the answer to a series of questions referring to it. There is no underground drainage; dirt and filth lie about the corners of the courts; the air is very bad; the inhabitants apparently in the most wretched state; pigs living in the kitchens inhabited by themselves; fever prevails in the district almost constantly; and the cholera prevailed in some of those courts, and several people were lying dead in one house at one time; the lodging-houses are as wretched as it is possible that they can be, kept by persons of bad character, the resort of a migratory and changing population of a very low description, and the sources of infection. The price of a night's lodging in these places is 2*d.*, 2½*d.*, and 3*d.*, and the stairs are often covered by poor persons who come in after those who can afford to pay have retired for the night. Some streets are mentioned, (Collingwood street, Nelson street, and Vincent street,) which were formed about thirty or forty years ago, and are inhabited in stories, where the cellars are occupied as dwellings without any sewage whatever.

The evidence of this, and of several other witnesses, though expressed in the present time refers to the date at which the evidence was taken. In the case of Mr. Brett it was in July, 1843.

Charles Freeth, esq., a gentleman largely connected with house property

in various parts of the metropolis, the next witness examined, confirmed the testimony of Mr. Little, and gave some striking instances of the oppressive conduct of the Commissioners of Sewers, and the great expense which their regulations entail on the builders of houses for the poor. The facts which he adduces fully justify his statement that "the whole system of sewage in the metropolis requires attention." The following extracts are interesting. "There is a leasehold house property, which I have managed upwards of twenty years, in the neighbourhood of the Blackfriars road." "The houses were built a great many years ago. The person for whom I acted purchased what was at that period called the improved ground-rents of those houses. He never thought that a house, which at that time let for £50 a year, would be reduced in value to £30; he conceived he was quite safe from any deterioration which could affect him. Those houses have no sewage; and if you dig a hole, the ground is so completely saturated with moisture, that it bubbles up with a quantity of foul liquid matter; the privies are emptied very frequently, and there is now a difficulty in finding tenants at £30 a year. There is a great deterioration arising from the want of proper drainage; notwithstanding there is an immense sum collected for sewers' rate, not one house has the benefit of any sewer whatever. They are forced to pay a very heavy sewers' rate, and incur a great expense in emptying the cesspools." "I have now an acre of garden ground in the rear of my residence, upon which I should build eight cottages of a rather small description, and which are much in request there. This ground possesses ample drainage into a main sewer, but I am deterred from building upon it because the commissioners of sewers would probably compel me to build a sewer, at the expense of between £200 and £300 for the drainage of those eight cottages only; and, therefore I prefer to use it as garden ground than to take upon myself that expense." With regard to cellar dwellings and sanatory regulations generally, the witness speaks as follows: "I think that all those cellar-dwellings are a disgrace to the country, and all such cellar-dwellings (not having an area to keep them dry,) should be forbidden by Act of Parliament; indeed, the want of proper sanatory regulations is disgraceful to us, and can only arise from, I fear, the ignorance of the respectable class of society of the state of the poor in poor neighbourhoods; the great majority of respectable persons appear to me to be in profound darkness, as to the masses of misery, filth, and wretchedness, which are, in many cases, only separated from their own comfortable houses by a nine inch wall; behind some of the first streets in London, scenes may be found at which humanity shudders; and it is these neighbourhoods which require immediate inspection, cleansing, and improvement."

Dr. Neill Arnott was the next witness examined. His evidence opens with some very important statements, in reference to fever, which, in common with Dr. Southwood Smith, he attributes to atmospheric impurity arising mainly from deficient cleansing and drainage. This theory is opposed to that of Dr. Alison, who has strongly expressed his opinion that too much had been attributed to decomposing animal and vegetable substances, and too little to distress, as exciting causes of fever. This objection it is Dr. Arnott's first object to remove; and as it is of vital importance to trace fever to its true cause, whatever it may be, we shall detail the several facts which induced him to abide by his own expressed conviction, and to reject that of Dr. Alison.

The first fact adduced is, the existence in Spitalfields, during a period of full employment, of a severe epidemic, "which subsided in a marked degree, at a time when half the looms were thrown out of work." The medical officer of that district, who, in times of full employment, had as many as 800

fever cases to attend to in one year, then found the number fall to 250 cases; and he makes the following striking statement:

"The greatest number of fever cases we have, is of persons who fall ill during the time they are in employment. I think they are more attacked when in work when the windows are closed, and there is no ventilation. Many of them are obliged to work with closed windows, to keep out the moist air, and prevent the dust blowing upon their work. When they are out of work they are more out of doors looking after work—more in the open air; and that very exercise may be the means of keeping them in health. This observation applies to the weavers. I find that they have generally less fever when they are out of work. The reverse, I think, holds, as respects out-door labourers, such as those who work at the docks. When they are out of work, they stand about waiting in the cold, and, when cold, they generally take cheap gin, and no food; they catch cold, and on going to their close, filthy habitations, their cold is apt to generate fever."

The following facts point strongly in the same direction:—"In May, 1832, there was an almost entire cessation of work at Paisley, so extensive, that extraordinary means were taken, by general subscription, and with the aid of the government, to relieve the distress. At that precise time, the medical men, having charge of the Fever Hospital, were surprised by an extraordinary diminution in the number of cases of fever. There were, during that month, just one eighth less than the average during the five preceding years. But the demand for goods and labour subsequently returned, so that the whole population was again employed, and warehouses were cleared of goods that had not been empty for ten years before. In this restored state of the labour-market, a new epidemic broke out."

Manchester affords another case in point:—In the year 1840, the total deaths in that town were 1 in 28·36; but, though distress increased, they were reduced, in 1841, to 1 in 31·59. In the following year, when there was an increase of general distress, they still diminished to a rate of 1 in 33. They diminished in Manchester, which was distressed, in 1842; whilst, in Liverpool, a commercial city, where the labouring population had suffered little comparatively from distress, the deaths increased to the number of 700 above the average."

In strict accordance with the foregoing facts are the remarkable results obtained by Dr. Davidson, of Glasgow, in regard to the physical condition of 429 fever patients admitted at the Glasgow Infirmary: 101 persons (28 males and 73 females) were full, or plethoric, having an extra quantity of adipose texture, or of blood; 209 (116 males and 93 females) were moderately stout, that is to say, they had an ordinary quantity of muscle and cellular substance; 44 males were muscular; 65 persons (24 males and 41 females) were spare; and only 7 (2 males and 5 females) were emaciated, or unhealthy in appearance. The spare and unhealthy, when added together, form only about 17 per cent. of the whole number. Almost all the patients, as far as could be ascertained, were engaged in their ordinary occupations at the time of their seizure.

These statements of Dr. Davidson are confirmed by the Report of the District Surgeons of Glasgow, who state, in reference to the fatal epidemic of 1843, that it was most severe among the labouring classes—even although the individuals were apparently somewhat robust—*if their habitations were dark, damp, filthy, and unventilated.*

These facts are quite conclusive as to the little direct influence which distress has on the prevalence of fever. On the contrary, it would appear that diminished means, and want of employment, tend indirectly to check the

prevalence of fever, by driving the sedentary artisan from his unwholesome place of work into the open air, and by taking away from the out-door labourer the means of indulgence in habits of intemperance.

Instead then, of poverty being the cause of fever, fever must be regarded as one of the most fruitful sources of poverty. This is a wholesome view of things, and one calculated to stir men to action, and to encourage them in the performance of their duty. If fever be not the offspring of poverty, but of the filthy state of the streets and houses which the entire labouring class are constrained to inhabit, then may fever be prevented by efficient cleansing, sewerage, and ventilation.

Having settled this important question of the influence of distress in the production of fever, Dr. Arnott quotes from American authorities some striking passages illustrative of the condition of two American cities, New York and Philadelphia. The account of New York is given on the authority of Dr. Griscom, the inspector of funerals in that city.

" Upwards of 33,000 of the population of that city live in cellars, courts, and alleys, of which 6618 are dwellers in cellars. Many of those back places are so constructed as to cut off all circulation of air, the line of houses being across the entrance, forming a *cul-de-sac;* while those in which the line is parallel with, and at one side of the entrance, are rather more favorably situated, but still excluded from any general visitation of air in currents. As to the influence of these localities upon the health and lives of the inmates, there is, and can be, no dispute; but few are aware of the dreadful extent of the disease and suffering found in them. In the damp, dark, and chilly cellars, fevers, rheumatism, contagious and inflammatory disorders, affections of the lungs, skin, and eyes, and numerous others, are rife, and too often successfully combat the skill of the physician and the benevolence of strangers. I speak now of the influence of locality merely. The degraded habits of life, the filth, the degenerate morals, the confined and crowded apartments, and insufficient food of those who live in more elevated rooms, comparatively beyond the reach of the exhalations of the soil, engender a different train of diseases sufficiently distressing to contemplate; but the addition to all these causes, of the foul influences of the incessant moisture, and more confined air of under-ground rooms, is productive of evils which humanity cannot regard without shuddering." After this description we shall not be surprised to hear that this cellar population is often ravaged by fever, while the population occupying the upper apartments of the same house are untouched; or that the physician is aided in his search after a patient by a " peculiar and nauseous effluvium issuing from the door;" or that the average age of death in such a town, in an average year, does not exceed 20 years.

Philadelphia seems to be as little better than New York, as Manchester is than Liverpool. With regard to the former city, Dr. Griscom informs us that, " in the average of 12 years, the mean age of death has not exceeded 20 years and 7 months. Half of those born there appear to die before the fifth year, and no less than 27 per cent. of the remainder die under 50 years of age; and the average age of death, of all who die there above 20 years of age, appears to be below 46 years; whilst in Bethnal Green, one of the worst districts in London, it is nearly 49 years; and the average in London appears to be 53 years." This mortality, excessive as it is, would not appear to be greater than that of many other cities of the United States; for Dr. Governeur Emerson states, in opposition to some of the American publications, that Philadelphia presents " as low, if not a lower, rate than any one of them."

Our space does not allow us to cite at length the passage which Dr. Arnott extracts from the Medical Statistics of Philadelphia, by Dr. Emerson. Fever,

in some of its forms, is almost universal among the inhabitants of the undrained and unpaved outskirts, but of rare occurrence in the central parts, which are well paved and drained; "by far the greatest proportion of the annual sickness and mortality of ordinary seasons, is furnished by the narrow and confined alleys and courts existing in various parts of the town; the difference, though sufficiently obvious in adults, is most lamentably conspicuous among children;" deaths from cholera are rare in houses with large and well-aired apartments; the influence of meagre and unwholesome food, and immoderate indulgence in strong liquors, though usually mentioned as the chief causes of the excessive mortality of the labouring class are insignificant when compared to that of breathing air that has been previously expired, and which, moreover, is commonly charged with animal and vegetable effluvia;—these are some of the points touched upon, and they confirm the opinions of all who have inquired into the condition of our large towns.

Before dismissing Dr. Emerson, it may be useful to quote his opinions on the necessity of legislative interference on behalf of the health and lives of the labouring class. "The numerous instances," he says, "wherein the mercenary calculations of individuals have tempted them to put up nests of contracted tenements in courts or alleys admitting but little air, and yet subjected to the full influence of heat, have often induced us to wish that there could be some public regulation by which the evil might be checked. Mankind have inhabited cities long enough to know from severe experience, that there are certain limits to the denseness of population, which, when passed, always lead to disease and mortality. As we think everything leading to the preservation of public health must be a fit subject for legislation, we do not see why a law should not be procured by which the undue crowding of population might be prevented, and the number and size of dwellings adjusted to superficial limits. There are, at present, municipal regulations intended as a protection against conflagration, by designating the materials of which houses shall be constructed; and if such precautions be deemed so important when property is the consideration, of how much more consequence would be those for the preservation of health and life."

These opinions in favour of legislation arising from a quarter where there is the greatest possible jealousy of all external interference, must serve to strengthen the hands of those who regard such interference as a sacred duty which governments cannot neglect without foregoing their highest privilege, or nations postpone without deserving and receiving punishment.

Dr. Arnott's views on fever, and the conditions by which it is accompanied and produced, are embodied in the following passage: "Our inquiries," he says, "gave us the conviction that the immediate and chief cause of many of the diseases which impair the bodily and mental health of the people, and bring a considerable portion prematurely to the grave, is the poison of *atmospheric impurity* arising from the accumulation, in and around their dwellings, of the decomposing remnants of the substances used for food and in their arts, and of the impurities given out from their own bodies. The means of removing these sources of injury are—1st. The labour of scavengers for bulky solid matters. 2d. The use of sewers or drains with a sufficient supply of water for liquids and comminuted solids, which running water can carry. 3d. Modes of ventilation for aerial matters. Now, in our best towns and improved localities, prodigious faults are still committed in respect to all the particulars mentioned. 1st. There is in many places defective work of scavengers, as became notorious when the cholera was prevalent. 2d. Drainage is yet generally imperfect, and that in various ways. (*a*) In some places

there are only open or surface drains, allowing exhalations freely to rise into the atmosphere, and these often are stagnant, and by that more noisome—as still seen in some parts of the suburbs of London. (*b*) Even covered drains are often made with insufficient fall or declivity, and so become only extensive cesspools, contaminating the soil around them, and the atmosphere above, as may be discovered at any time in some of the streets of London, where the drains have to be opened at intervals, for the removal, by scavengers, of solid deposit, accumulating to obstruction. (*c*) Even with good street drains, there may be defect in the house drains, or in their connexion with the others; or in the sinks, water-closets, &c., as proved by noted cases, when fevers have infested particular houses for long periods, until the drains and adjuncts were put into good order. From want of proper supervision, one or other of these defects is very common, rendering the heavy expense of the present system nearly fruitless to many parties. (*d*) Then the supply of water requisite to render drains effective is often altogether wanting, or is obtainable only at an expense which many of the poorer inhabitants cannot afford. Yet we know that with good arrangements, such as have indeed already been made by the municipal authorities of certain places, abundant supplies of excellent water for every useful purpose, may be had at less expense than, in most places, it costs in money or labour to the poorer classes, to obtain what is absolutely necessary for their mere drinking and eating. 3d. The subject of ventilation has, as yet, been so little alluded to, and is so little popularly understood, that even our Houses of Parliament, in which the intelligent and wealthy of the land assemble, were, until lately, seriously hurtful to those who had to be much in them, from the great impurity of the air occasioned by the crowd. The same fault, unsuspected, exists to a considerable degree in many of our ordinary domestic arrangements; and in workshops, and the dwellings of the labouring classes, it is one of the greatest scourges of the people."

On the subject of fever and its prevention, Dr. Arnott's evidence contains a fact too important to be passed over. "When," he says, "I visited Glasgow with Mr. Chadwick, there was described to us one vast lodging-house, in connexion with a manufactory there, in which formerly fever constantly prevailed, but where, by making an opening from the top of each room, through a channel of communication to an air-pump, common to all the channels, the disease had disappeared altogether. The supply of pure air obtained by that mode of ventilation was sufficient to dilute the cause of the disease, so that it became powerless."

The remainder of Dr. Arnott's evidence is devoted to the important subject of ventilation. After expressing himself in favour of the compulsory ventilation of the schools of the poor, and the inspection and regulation of the lower class of lodging-houses, he thinks that it would be desirable, in respect of the houses of the poor, "to command thus far, that there should be near the upper part of each room an opening, to be used on proper occasions, to allow the hot breath and other impure air, which rises to the ceiling, to escape there. It is impossible to ventilate aright a room containing a number of persons, except through an opening near the top of it, and the great defect of all our arrangements now is the want of such an opening." This opening near the ceiling Dr. Arnott would make compulsory. "I think," he says, "there should be no room without an opening in or near the ceiling, to be used when needed. All rooms should have the upper window-sashes made to be drawn down; and, in certain cases, an opening might exist into the chimney, or through the ceiling. Knowledge of the subject, however, is

required for the right use of any of these means, as with an open fire the first and last mentioned might become inlets of cold air passing towards the fire, instead of being outlets for the impure air leaving the room."

The opinion here expressed might have been less cautiously worded, for in all rooms with open fire-places, whether there is a fire burning in the grate or not, the chimney is the source of draft, and the exit for foul air; so that whatever the position of the openings, whether at the top or bottom of the room, air will be drawn in through them. In the absence of the open fire-place or flue, or of any mechanical source of draft, the air may escape by openings in the upper part of the room, but even in this case, if there be much difference between the temperature within the room and without, the equilibrium will be re-established by cold air flowing in through every opening, whether in floor, ceiling, or walls. Where, however, there is an open fire-place, as in the school referred to in the evidence, the current of air is more keen and forcible, and may give rise to severe colds and inflammation of the lungs.

The importance of efficient ventilation, the fatal effects which follow on the neglect of it, and the popular misapprehensions on the subject, are well illustrated by three cases of a different kind reported by the witness. The scene of the first was the Zoological Gardens, in the Regent's Park. The proprietors were induced to incur a considerable expense in building a house to receive the monkeys, and, as too often happens with a more important race of animals, the only consideration which seems to have occurred to the architect was that of keeping them warm; for this purpose two ordinary drawing-room grates with low chimney openings, and an apparatus of hot water pipes, were introduced, and the windows and other openings in the walls, with the exception of some holes made in the skirting close to the floor, were closed. Into this room, thus heated and thus imperfectly supplied with air, sixty healthy monkeys, many of which had already borne several winters in England, were introduced. A month afterwards, more than fifty of them were dead, and the few remaining ones were dying. "This room, open only below, was as truly an extinguisher to the living monkeys as an inverted coffee cup, held over and around the flame of a candle, is an extinguisher to the candle. Not only the warmth from the fires, and the warm air that was allowed to enter by the openings in the floor, but the hot breath, and all the impure exhalations from the bodies of the monkeys ascended, first, to the upper part of the room, to be completely incorporated with the atmosphere there, and by no possibility could escape, except as a part of that impure atmosphere gradually passing away by the chimneys and the openings in the skirting; therefore, from the time the monkeys went into the room until they died, they could not have had a single breath of fresh air. It was necessary only to open, in the winter, part of the ventilating apertures near the ceiling, which had been prepared for the summer, and the room became at once salubrious." The second case is that of the school already referred to. Dr. Arnott describes it as follows: "The day after I saw the monkey-house just mentioned, I was sent for to visit a young gentleman at a respectable school in the neighbourhood of London, where there were about forty boys. The boy I went to see was thought to be falling into consumption, and I learned that others of the boys also were ill. On examination I found the cause to be only a less degree of the error which had destroyed the monkeys. A new school-room had been built at the back of the dwelling-house, in which room the forty boys spent much of their time, and there was no opening by which their breath could escape from the room, except through the low fire-place. There was, indeed, a skylight above with sashes, which might be opened; but the schoolmaster told me that he took care never to open these

when the boys were present, because, having done it once, a boy got severe inflammation of the lungs, in consequence of the cold air rushing in upon him." The third case adduced in illustration of the bad effects of defective ventilation, is that of the great charity-school of Norwood, containing 700 children, of whom the greater part fell into ill health, and many died really from imperfect ventilation of the house, but, as it was believed by the public, and by more than one medical man—for want of food. The children recovered their health, when the faults in respect to ventilation were pointed out and remedied.

In the case of the monkey-house, we have Dr. Arnott's authority for stating, that the building was constructed, as it was believed, with the aid of the best available knowledge on the subject. Persons were employed whose special profession it was to manage such matters. But it appears that the ventilation of buildings forms no part of the business of the architect; for, in answer to the question, "Are you not aware that there are Encyclopædias of Architecture and Building, in which the topic of warming and ventilating does not occur?" Dr. Arnott says, "I know that the subject has been very little understood by those whose business it was to study it fully." And he elsewhere expressed his opinion, that an acquaintance with the principles of ventilation is almost as important to the utility of a medical man, as acquaintance with anatomy. There is too much evidence that hitherto, the members of both these important professions have been as negligent of its practice as they have been ignorant of its principles. The practical suggestions with which Dr. Arnott's evidence abounds are well worth the trouble of a reference to the original report. Want of space will oblige us to bring this analysis to a close by noticing, very briefly, some of the more important points.

Some allusion is made to a cheap apparatus for ventilation, consisting of "a very simple air-pump or bellows, of suitable size, and free from an error of construction, which, in those made hitherto, has rendered the labour of working from fifty to one hundred times greater than it needed to be." The principal features of this invention, and those which distinguish it from the bellows of Dr. Stephen Hales, are the large size of the openings for the entrance and exit of air, and the light materials of which it is to be made. Such an apparatus has been put up in the Hospital for Consumption and Diseases of the Chest, and report speaks very favorably of the success which has attended the experiments hitherto made with it.

The remainder of Dr. Arnott's evidence consists of replies which are chiefly affirmatives of questions put by the commissioners, as to the importance to all large towns of abundant supplies of pure water, efficient drainage, and open spaces for exercise and recreation, and the injurious effects of the many impurities with which the air is loaded. The objection to burial-grounds is urged with some reservation; and the waste of animal matter, from the prevalent system of slaughtering cattle in the centre of the metropolis, is animadverted upon. In answer to the question, "Do you think the humbler classes stand in need of some strenuous exertion, to be made through the medium of the proper authorities, for the improvement of the drainage, and of the structure of their dwellings, and cleansing, and various other matters relating to their health?" Dr. Arnott says, "I have always believed that nearly half of the accidental illnesses, that is, of illnesses not resulting from old age, that occur among the lower classes, might be prevented by proper public management." When further questioned as to which of certain specified necessaries for sustaining health—air, temperature, aliment, exercise—come "within the province of public administrative regulation;" he replies,

"I believe the air does. If you allow sources of aerial impurity to exist in or around dwellings, you are poisoning the people; and while many may die at early ages of fevers and other acute diseases, the remainder will have their health impaired and their lives shortened. An unhealthy race will have arisen in consequence of the great defect."

The evidence of the next witness, Thomas Leverton Donaldson, esq., for twenty-seven years commissioner, and eight years chairman, of the Westminster Commission of Sewers, is chiefly of interest inasmuch as it conveys much useful information on the working of the present system.

The following extracts from the evidence of Mr. Leonard, surgeon, medical officer of St. Martin's parish, is important as displaying the condition in respect of drainage of one of the leading thoroughfares of a central part of London. "There is no sewer in Long Acre, except a small barrel-drain from Conduit court to St. Martin's lane. Some of the cesspools are very large, and receive the refuse from several houses. One receives from five houses, and the drains running into it pass under workshops, rendering it almost impossible for the men to stand to their work. I know one house in which there is a cesspool below the kitchen floor, near the fire-place, and another in the back kitchen. There was one emptied at No. 51 about two years ago, and 32 cart-loads of soil were taken from it. An immense cesspool also receives the refuse from all the houses in Long Acre, from the corner of Leg alley to James street, being Nos. 35 to 43 inclusive, and in James street, Nos. 18 to 21 inclusive, in all twelve houses. It is of very great extent, and not only occupies the whole area of a large backyard, but is four feet under some extensive workshops, and the corner of a house is founded upon part of the arching of it. When last opened carts were employed constantly for a week to remove the soil; at the end of that time rods were passed down, but as no solid bottom was found, they were compelled to give over the task of clearing it out, and it was closed up again. At the end of Castle street, nearest Drury lane, a great nuisance also exists, almost every morning the soil being obliged to be cleared out into the street; and in Drury lane there are houses that are obliged to pump the foul water into the channel in the street every two or three nights. The sewer is in Castle street, Long Acre, on the one side, and in James street, Covent Garden, upon the other. The houses in the several courts in Bedfordbury are badly drained. Those also in part of Rose street and Angel court; in the latter is a public privy, which is horribly offensive. Some houses in Tailor's buildings are also very offensive; there is another public privy, I believe, there. There are several houses in my district which are scarcely tenantable from drains passing under the floors, which are only covered with timbers. I have sometimes been obliged to leave them to breathe. In Broad court, Cross court, Duke's court, Martlett, and Crown courts, there are houses which at times are very offensive, from fetid odours arising from cesspools and drains." Mr. Leonard agrees with other medical men in ascribing typhus fever to those sources of impurity.

This picture of the barbarous condition of one of the chief thoroughfares of the metropolis, and of the district immediately surrounding, would be incomplete without the following explanation furnished by Mr. Donaldson. "As to this complaint of Long Acre," he says, "it is a crying grievance—a grievance which we ourselves have not been able to relieve. A large part of the property on both sides there belongs to the Mercer's Company, and they ought to lay out about £5000 upon the sewers on their estate. We cannot get them to do so; we have applied to them when complaints reached us, and have entreated them to send their surveyor to confer with us, but

although they receive an enormous rental from that district they will not interfere; it is one of the serious evils of which we have to complain, and is particularly alluded to in the report on the poorer districts, copies of which have been supplied to this commission. In Bedfordbury we have lately brought up a sewer, but we cannot prevail upon the owners of property there to continue it."

It is difficult to say to whom this description of Long Acre is most discreditable—to the wealthy company which owns so much of the property there, or to the public which patiently endures such disgraceful negligence. That the inhabitants themselves are not indifferent to the disgusting circumstances by which they are surrounded is attested by the public papers, which often contain letters of remonstrance. It is difficult to conceive a stronger argument for legislation than is afforded by such details as those which have been just given.

Mr. John Worrell, Registrar of Births, Deaths, and Marriages in the district of Gray's Inn lane, and formerly a Commissioner of Paving, Cleansing, and Lighting, furnishes some important information. His district, though not generally unhealthy, has its unhealthy localities. "The number of deaths are doubled in some parts as compared with other parts of the same district; and occur in a greater proportion in all places where there is the greatest want of cleanliness. The cases of smallpox and typhus fever, I observe, are exclusively confined to those places; and, although many causes may exist to induce and to spread them, none, in my opinion, is so great as the disgusting effluvia arising from the foulness of drains and sewers," not of the main sewers, but of "the drains which lead into the sewers." "In many places, where a number of small houses are built (for sale), the builders considering only in what way the houses can be erected at the least possible expense, a number of drains run one into the other, of such small dimensions, as to be wholly insufficient to carry off the refuse. The mischief from these sources is not felt perhaps until the houses have been sold to different persons; and then, when the drains become choked, and the privies full, the owners disagree as to the proper remedies, until the atmosphere is rendered offensive, and the health of the unfortunate occupants, as well as of those living in better regulated dwellings, is seriously affected." How inefficient the cleansing of the poorer districts must be may be inferred from a curious fact stated by the witness, that in the parish of St. Pancras, in which he resides, there are nineteen paving boards!!! In a parish with nineteen paving boards it will not excite surprise that "in some parts there is no paving at all;" that "where there is any, it is inefficient;" that "the paving in those districts which are inhabited by the poorer classes—courts, alleys, and lanes—is generally neglected;" that the surveyors of pavements neglect their duties; that the persons who contract to remove the ashes and dirt take away the profitable ashes, but leave the unprofitable filth for months together in the poorer districts, though bound to remove it every fortnight; that the very places, in fact, which require most cleansing are most neglected.

The following table, abbreviated, rearranged, and reduced to a common denomination of 10,000, exhibits the mortality in the district of Gray's Inn lane, St. Pancras, in five years:—

Class.	Description of Occupiers.	Deaths per 10,000. Under 1 Year.	Under 5 Years.	Total Deaths.	Epidemic and Endemic Diseases.
1	Merchants and Professional Men.	105	202	663	98
2	Respectable Tradesmen and Lodgers—not over-crowded.	150	266	830	75
3	Small Tradesmen and Mechanics — densely crowded.	249	477	1070	145
4	Labourers, Costermongers, and poor Mechanics.	382	750	1364	267

The mortality in this, as in other tables contained in this volume, varies inversely in the condition of the district, the mortality being greatest in the worst-conditioned districts, namely, in those which are most remarkable for neglected cleansing and drainage. The only exception to this rule occurs in the case of epidemic and endemic diseases, which are less numerous in the second than in the first district. Under one and under five years it will be seen that the deaths are nearly four times as numerous in the worst as in the best district, and at all ages more than twice as many. The deaths from epidemics are nearly three times as numerous in the one as in the other.

Mr. Worrall, it must not be omitted to state, entertains no doubt that the poor-rates are increased by the neglect of cleansing and sewerage. "If," he says, "a little money was expended in keeping the places clean, there would be a saving of much that is now spent in supporting the poor."

The Commissioners next proceeded to examine Mr. W. R. James and Mr. J. Walker, the former clerk, the latter relieving officer, to the Holborn Union, both well acquainted with every part of the district. Their evidence is valuable chiefly as revealing the state of the notorious neighbourhood of Saffron Hill. It appears "that the inhabitants of the courts and alleys bordering on the Fleet ditch are in the most filthy and vile state that can possibly be;" that "the houses are dirty beyond everything;" that "no description can come up to the reality;" that the privies, of which there is only one to seven or eight houses, are in a most filthy state; that there is no authority for seeing that they are cleansed; that pigs have been kept in some of the houses; that in many of the streets and alleys the paving is very bad, and the water stands in pools and stagnates;" that the supply of water is limited by that of the vessels in which it is kept, which are not always very capacious, being a tea-kettle, a saucepan, or a half butter-tub; that "nine rooms out of ten have only a little straw for a bed, and a stool;" that a dozen families will inhabit one room, and that on one occasion from 20 to 25 persons were found living in a room of about 16 feet square (not a foot square to a person); that the Irish, and still more the Italians, are remarkable for this overcrowding; that the persons who adopt this barbarous and unwholesome habit are earning 12*s.* to 18*s.* a week each; and that the Irish labourers live in this state without reference to their wages. One or two extreme cases of overcrowding ought to be more particularly noticed. Mr. James says, "I have known instances of a person having a small room, taking it for himself and his family, his family consisting of himself, his wife, and three or four children, and they have

taken in six or seven lodgers; and there are instances of women being actually confined where all those people were about." Mr. Walker says, "I went to one room where the woman had just laid-in that morning. I found the children making a great noise, and I quieted them. When I went into the room, to my very great surprise, I saw six or eight persons, men and women; it was only three or four hours after her delivery." For this sort of accommodation they pay, perhaps, 1*s.* a week; the room is let for 3*s.*, and the first tenant makes 7*s.* or 8*s.* out of it. In these rooms they sleep without distinction of sex. It can create no surprise to hear that fever is rife in these overcrowded habitations.

The moral state of this district is in close correspondence with the physical. Certain parts of the district are the haunts of thieves and prostitutes, where the children play about by hundreds, and congregate in masses three parts naked, insulting every decent person who goes by. A vast number of these children are under no control; and at "12 and 13 years of age—very little beyond that age—they consider themselves as men and women, and live together as such at 14 or 16; a lad talks of his wife, and the girl of her husband." but, as it would appear, without any authority for the use of those terms.

The natural drainage of this district is good, which accounts for the mortality not being quite so excessive as might naturally have been expected. The witnesses represent the sanatory state of the district in a more favorable light than the records of the Registrar-General, which tell of a mortality of 26 in 50 under 5 years of age. In answer to the question, "Do you consider that a constant supply of water, instead of this partial supply, would tend greatly to promote the comfort of the inhabitants?" one of the witnesses answers, "I am afraid not. I think they are habitually dirty, and that nothing will make them clean." It is sad to be obliged to agree in this opinion of the Irish population. No one who knows the inveteracy of their habits, their heedlessness, and their idleness, can be very sanguine of the effect of mere facilities. Here education must come in. Give the Englishman or the Scotchman water, and there is some hope that the existing generation will use it; from the present race of Irish, little can be expected or hoped. The English, even, are uncleanly and untidy in their persons much less from want of water and clothes than from idleness and carelessness. In the meanest garret of St. Giles, with the rudest utensils, and the poorest wages, it is *possible* to wash clothes, to dry them, and to iron them, so as to equal the best specimens from the country laundries. With increased facilities there must be a better education, or sanatory measures will be but imperfectly applied.

William Gravatt, esq., F.R.S., a civil engineer, the next witness, gave some evidence on the best mode of supplying towns with water; from which it may be well to extract the following estimate of the expense of the means of cleanliness. The family of an English workman (living in London), of the cleanest kind—say a man, wife, marriageable daughter, and two other children—will use, weekly, soap, 2lbs., at 6*d.* a pound, 1*s.*; Pearlash, $\frac{1}{4}$lb., at 4*d.* a pound, 1*d.*; starch and blue, 2*d.*; making, in all, 1*s.* 3*d.* The cost of water (20 gallons per day to each person), $1\frac{3}{4}d.$ Grand total, 1*s.* $4\frac{3}{4}d.$ Mr. Gravatt bears his testimony to the value of the high-pressure system of water supply, of which, as we learn from the commissioners, Philadelphia offers an example well worthy of imitation. In that city there is an arrangement by which the water is always kept on at high pressure, so that the servant goes to the door every day, applies the hose to the main or pipe, and cleanses the pavement, and once a week cleanses the front of the house, throwing the water to the

very top; and it is stated that, on the occurrence of a fire, the hose is applied immediately, aud taken into the house to extinguish it.

In the face of this *fait accompli*, Thomas Wicksteed, Esq., C.E., and engineer to the East London, Kent, and Vauxhall Waterworks, (the ncxt witness,) advances several arguments against the system of constant supply at high pressure. The large size of the mains, the waste of water, and the consequent incrcase of expense are the reasons put forward, but as it may admit of question, and has been denied, that a constant supply is a wasteful supply, and as the increase of expensc, even on Mr. Wicksteed's own showing, is not such as to counterbalance the greatly increased advantages attending it, as, moreover, the constant supply at high pressure has been introducecl, and is in actual operation, not only in Philadelphia, but in Greenock, Glasgow, and Ayr,* the objections may be dismissed as of little weight. Indeed, Mr. Wicksteed himself admits that the more perfect system is applicable to small towns; we have only, therefore, to treat the metropolis and our larger towns as assemblages of smallcr ones, to rob the objections of all their force. The evidence of this witness contains some interesting statements as to the supply of water at Cork, at the time at which it was given. The popnlation of that city is about 80,000, and the number of houses 9000 but thc supply of water only cxtends to 811 honses, being less than 1-11 of the whole number. The average rate per house amounts to 44*s.* 11*d.*, which Mr. Wicksteed proposes to reduce to 13*s.* 11*d.*, by a better and more comprehensive plan. The poorer classes as may be supposed, were, under this state of things, very badly supplied; they had to fetch the water an average distance of half a mile, and were indcbted for it to the kindness of the tradespcople. It is satisfactory to find that the Corporation of Cork were thoroughly alive to the evils of this scanty and inconvenient supply, and that they were not blind to the commercial advantages of an improved plan, as appears from the following passage of their report:—"The relief in poor-law, dispensary, and fever-hospital taxation, owing to the improved health of the population, producecl by an ample supply of washing and drinking water from 3773 private supplies and 120 public fountains, will, your committee is convinced, save more than the entire £728 10*s.* or £800." It is gratifying to find that in one Irish city at least, the authorities are prepared to appreciate the advantages of those sanatory measures, which by Lord Lincoln's Bill have been so strangely limited to the provincial towns of England, to the exclusion of Scotland and Ireland, and, stranger still, of the metropolis of the empire. Some interesting estimates are given of the cost of raising water, from which it appears that 1000 gallons may be raised 100 feet high, by steam, for the small sum of 0·15*d.* It may be interesting to contrast this trifling cost with that of conveyance by hand. "I believe," says Mr. Wicksteed, "that they are paying now in some neighbourhoods about London from fourpence to eightpence a barrel for water, which has bccn brought from a distance. At Hampstead I belicve they pay about eightpence. I suppose the highest cost by the watcr companies is considerably under a penny. I find, upon reference to a paper entitlcd 'Observations on the Past and Present Supply of Water to the Metropolis,' written by me in 1835, that, according to the Parliamentary Returns in 1834, the amount received by the water companies in the metropolis was at the ratc of thrce fourths of a farthing for thirty-six gallons, and it is stated: "In some of the suburbs of London water is still supplied by carriers; where it is carricd in buckcts from wells, it is sold at the rate of eightpence per thirty-six gallons, or forty-two times as much as

* See evidence of Mr. Robert Thom, Report, p. 17, our Abstract, Vol. III, p. 384.

when supplied by machinery; and when it is carted from the river at fourpence per thirty-six gallons, or twenty-one times more than machinery." In the same paper it appears that in A.D. 1582, the supply of water to the metropolis, by means of the London-Bridge Waterworks, was 3,170,000 imperial barrels per annum, about seven eighths per cent. of the supply afforded by the water companies in 1833, namely, 357,288,807 barrels per annum." This increase is doubtless out of all proportion to the increase of the population in the same interval, and it is gratifying to find that it is still advancing with rapid strides, though still utterly insignificant as compared with the ample water-supply of ancient Rome.

Mr. William Thorn, a contractor for cleansing several parts of the metropolis, furnishes some useful information respecting the value of the refuse matters. It appears that the charge for cleansing a cesspool of a fourth-rate tenement, with two families, is about 25*s.* and that the operation is performed every year or every eighteen months. It is obvious, therefore, that the cesspools entail a very serious expense. The contents are baked, and converted into a dry manure for exportation, but they do not seem, in their recent state, to command a market. The only part of the refuse of London which can be removed with a profit is the dust, but this has lately suffered depreciation. The sweepings of the streets, mixed with cow and horse-dung, are sold for a small sum, which, however, does not pay the expense of its cartage. The wood-pavement is deservedly commended for the ease and economy with which it can be cleaned, and for the comparative value of the sweepings from it. The ground granite from the macadamized roads can only be disposed of by being mixed with dung; in this state it is distributed by barges as far as Rochester and Margate, and by carts as far as Kensal Green; the charges by rail are too high to allow of the conveyance of town manure. With regard to the health of men employed in emptying cesspools, Mr. Thorn's report is favorable. They begin at 16 or 17, and never leave their employment; they are healthy and robust, live, in general, to a good old age, and do not suffer from any particular diseases, from fever, or by accidents. They drink a good deal. One of the men is 67 years of age. The sailors in the manure-barges are also a fine healthy set of men. In answer to the question, "Have you ever observed that fever cases have occurred in places where there has been any collection of filth," the witness, after adducing the negative evidence of Mr. Wray, of Salisbury square, says, "I never saw but one case, and that was in the neighbourhood of the Edgeware road; horse-dung had been shot there, and laid down for about two months, under the kitchen windows: a young fellow came direct from the country, and in a fortnight he had a violent attack of typhus fever." Some observations on the little work done by pauper labourers, and on the absence of urinals from the streets of London, deserve a passing notice.

From pp. 280-98,we have some valuable evidence from Mr. W. H. Wheatley, Registrar of part of the parish of Lambeth; Mr. George Duncombe, chemist and druggist, residing in Portland Town; Mr. George Pitt, Registrar of Rotherhithe; Mr. C. H. Rich, Registrar and Relieving Officer for the district of Mile End New Town; Mr. James Murray, Registrar for the district of Hackney road; and Mr. John Johnson, Registrar of part of the Shoreditch district. These gentlemen agree in representing the cleansing and drainage as very defective, the rooms and houses of the poor as overcrowded, the air of several districts as polluted by offensive manufactories, the streets as swarming with children, the public health as suffering, the duration of life as shortened, and the public burdens as increased. There is one point in which it is pleasing to find them quite unanimous, and that is,

the civil and respectful behaviour of the poor whom they are called upon to visit in the performance of their duties. Another witness, Mr. Henry Wright, a bookseller in the Haymarket, complains, with justice, of the inconvenience to which he and his neighbours have been put by the diversion of the sewer to a neighbouring street, and the consequent scanty flow of water; an evidence of the necessity of a larger quantity of water than that which flows from the houses, to keep the sewers free from solid deposits.

Among the most interesting and important statements of these witnesses, the following may be particularly specified: Mr. Wheatley bears testimony to the efficacy of vaccination in his district. Mr. Rich adds the following, to the many proofs on record, of the contagious nature of typhus fever: "Only within these few weeks, there was a person died in Little Halifax. The person, who attended on a person who died there, went home and died in a few days afterwards; we removed two of the family to the fever hospital, and they died, they were the persons attending each other." The same witness gives evidence of the cramped accommodation of tradespeople; in nine cases out of ten, he says, they have only one room. Mr. James Murray gives another example of the prevalence of fever in seasons of full employment, and its comparative absence in periods of distress. In 1837, there was a good deal to do, and fever was very prevalent. In 1842, on the other hand, there was a great depression of trade, but it was a particularly healthy year. Mr. J. Johnson gives a minute description of a part of his district, remarkable for defective drainage, combined with the nuisance of an open stagnant ditch, rendered doubly offensive by the refuse of the gas-works which flows into it. It will be found at p. 297.

The evidence of the next witness, T. Hawksley, esq., engineer of the Trent Waterworks, Nottingham, occupies upwards of thirty pages, and is replete with valuable facts and suggestions referring to the structural arrangements of towns. A former witness, Mr. Wicksteed, urged several objections against the constant supply of water at high pressure. Mr. Hawksley first addresses himself to the removal of these objections, supporting his arguments by the satisfactory results of actual experiment in the town of Nottingham, where that system has been in operation since 1830. An efficient and ample supply of water to towns is in every respect so important, and so essential to the physical well-being of the inhabitants, that the medical man ought to be prepared with the arguments and facts to be advanced in support of that which, if practicable, is obviously the best and simplest plan for securing such a supply. In the first place, the extra cost of raising the water to the height required for a constant supply at high pressure is comparatively small. In the town of Nottingham, for instance, if the water were lifted only half the height, the saving would not amount to more than about 1-20th of the total charge. This extra expense, small as it is, is the only one entailed by this system. In every other respect it is highly economical. The saving is effected in the following items: 1. The tank and ball-cocks, used for the supply and preservation of water within the houses, the cost of which is nearly equal to the cost of the water supply itself, are dispensed with. 2. The room occupied by the tank or water-butt is saved. 3. There is an obvious economy of labour in conveying or pumping the water to the upper parts of the house when the tank, as is commonly the case, is situated on the level of the ground-floor or in the basement; in obviating the effects of occasional leakage, in cleansing the tank from time to time, and in other ways not necessary to mention. The system under consideration reduces all labour entailed by the use of water to a minimum. 4. There is also a saving in the tenants' outlay for pipes, which admit of being smaller

and cheaper. 5. There is *less* waste of water, as is proved by the fact that the actual supply at Nottingham does not exceed from 80 to 90 gallons per house per diem, including breweries. dye-works, steam-engines, inns, and other places of large consumption. 6. The expense of superintendence is diminished. One experienced man, and one boy of about eighteen years of age, are on the system of constant supply, quite sufficient to manage the distribution of the supply to about 8000 tenements, and keep all the works, including cocks, main and service pipes, and the tenants' communication pipes, in perfect repair. 7. A further saving is effected in the diminished sizes of mains, in consequence of the supply being spread more equally over the day, instead of being limited, as in the old system, to a few hours, on alternate days.

There can be no doubt, therefore, of the great advantage, in point of economy, of the system of constant supply at high pressure. Add to the pecuniary saving the facility afforded for the supply of baths and water-closets within doors, and for the cleansing of roads, pavements, and houses, the extinction of fires, and the formation of fountains out of doors, and we have a compact body of arguments sufficient to justify the Government in insisting on this mode of supply in all towns, and under all circumstances.

The economy of this plan is very strikingly set forth in the following statement: "Before the supply was laid on in the houses, water was sold chiefly to the labouring classes by carriers, at the rate of one farthing a bucket; and if the water had to be carried any distance up a court, a halfpenny a bucket was, in some instances, charged. In general it was sold at about three gallons for a farthing. But the company now delivers to all the town 76,000 for £1; in other words, carries into every house 79 gallons for a farthing; and delivers water night and day, at every instant of time that it is wanted, at a charge 26 times less than the old delivery by hand." The effect on the habits and health of the inhabitants is thus described. "At Nottingham, the increase of personal cleanliness was at first very marked indeed; it was obvious in the streets. The medical men reported that the increase of cleanliness was very great in the houses, and that there was less disease. There was, also, an advantage in the removal of the assemblages round the public pumps, At Newcastle-on-Tyne, where they have common fountains, and where young girls are brought into contact with every description of characters, the effect is highly objectionable." It is gratifying to find that this great boon can be supplied at a very cheap rate. The average cost for the labouring classes is about 4*s.* 4*d.* per year, or 1*d.* per week. This cost would be diminished with every extension of the system, which affords a strong argument in favour of compelling the landlords of all houses to lay on water. Mr. Hawksley very justly contends that there is no charity in affording a gratuitous supply of water to the labouring classes, for it has simply the effect of making the landlord's tenements more valuable, and he puts that additional value into his pocket in the shape of rent." And again, he says, "I have a strong objection to supply the poor in respect of their dwellings with any article at a lower rate than that at which it is supplied to their more wealthy neighbours; for the difference passes in a very direct manner into the pockets of their landlords, who are thereby enabled to let their houses at a higher rent than they could otherwise command."

Some valuable evidence will be found at p. 309, on the filtering of water, from which it appears that, at a cost of less than one farthing extra per week, the 40 gallons of water deemed sufficient for the daily supply of one family may be filtered. A much greater expense would be incurred by the filtering of the water on the premises, to say nothing of the additional labour required. It is

also very satisfactory to find that the expense of bringing water from a distance is not very considerable. For instance, "to convey water to a town of 40,000 or 50,000 inhabitants from an *additional* distance of three miles, would probably increase the annual charge about 4*d.* per head." It is still more satisfactory to hear that "a first investment of 15*s.* per head, or 9*d.* of addition to the annual water-charge of each of the population, would enable a constant supply of the purest soft water to be delivered at all hours, and into every story throughout London, and that without injury to the interests of the existing companies, who might derive their supplies from this common source. A *very* considerable economy of management and working expenses would, indeed, result from this consolidation of engineering operations, which would go far in reduction of the increased charge of 9*d.* per annum." If the water-companies would be as willing to consolidate their rival interests as the inhabitants of the metropolis to pay an extra 9*d.* a year for this great boon, London might yet obtain a supply of water worthy of her pretensions to civilization and refinement. It is to be hoped that the Government will insist upon an amalgamation of all the water-companies, on fair and equitable terms, and include the metropolis in the operation of the intended sanatory measure.

Mr. Hawksley also gives some important evidence on the subject of baths, from which it appears that the cost of pumping and engine expenses for 100 baths is 3*d.*, and if the water be filtered, 5*d.*; and that warm baths may be supplied at a profit for 2*d.* a head, if taken by 200 or 300 persons per diem. The public baths at Nottingham have entirely arisen out of, and are dependent upon, the system of constant supply; which has also led to the establishment of public and private fountains, and of jets for cleansing fruit-trees and watering gardens and streets.

On the very important subject of irrigation Mr. Hawksley also imparts some useful information. He states that one man, by a proper distribution of pipes and cocks, might water 20 acres of ground a day; that the pipes might be laid down at from £15 to £30 per acre, and that 1000 gallons of water might be applied for $2\frac{1}{4}d.$ an acre. A very important application of the system of constant supply of water at high pressure is to the extinction of fires, for which purpose also it is highly economical, the cost per house being 2*s.*, which, at 10 per cent., is equal to a rent-charge of $2\frac{1}{2}d.$ per annum, or about $\frac{1}{5}d.$ per week. The pipes may also be carried, at a moderate expense, into factories or warehouses.

An abundant and constant supply of water also facilitates the erection of water-closets, which may be provided and maintained in repair for a weekly charge of $1\frac{1}{2}d.$ over and above the cost of the water-supply. The effect of this decent and economical substitute for the cesspool is well shown in the following passage. "My own observation and inquiry convince me that the character and habits of a working family are more depressed and deteriorated by the defects of their habitations than by the greatest pecuniary privations to which they are subject. The most cleanly and orderly female will invariably despond and relax her exertions under the influence of filth, damp, and stench, and at length ceasing, to make further effort, probably sink into a dirty, noisy, discontented, and perhaps gin-drinking drab—the wife of a man who has no comfort in his house, the parent of children whose home is the street or the gaol. The moral and physical improvements certain to result from the introduction of water and water-closets into the houses of the working classes are far beyond the pecuniary advantages, however considerable these may, under certain circumstances, appear."

After throwing out some valuable suggestions as to the construction of drains, the use of Staffordshire drain-pipes in place of the smaller brick sewers,

the execution of works of drainage, under contract to maintain them in order for a specified time, and the necessity of the superintendance and control of competent persons, the witness is questioned as to the application of the contents of the sewers to agricultural purposes. After stating that in some cases it will be very easy to receive the sewer-water of a town into depositing tanks, and there to collect the subsiding matters, he expresses a doubt as to the practicability of distributing the liquid contents by means of pipes, beyond a limited distance, to the market-gardeners. The principal difficulty apprehended arises from the large quantity of water thrown into the sewers by steam-engines and manufactories, and, as may be inferred, the consequent dilution of the refuse. The evidence recently laid before the Select Committee of the House of Commons on metropolitan sewage manure, has probably destroyed this objection, by showing the value of the sewerage in its present state of dilution, and the circumstance that the witness's name appears as consulting engineer to the Metropolitan Sewage Manure Company would seem to show that his doubts are now altogether removed. The following quotations will serve to show the great economy of the conveyance of liquid manure by pipes. "It is quite clear that a very great weight of liquid material may be moved by pumping, more cheaply than by any other known mode of conveyance." "The cost of transmitting water to a distance is very trifling indeed. Distance is scarcely any element in the expense of the conveyance through pipes; in fact, the pipe is a sort of continuous cart, which it is not necessary to move. You put the water into motion at one end, and whatever force you apply at that end is transmitted, minus the friction, to the other. You have not to carry the weight of the cart or of the horse with you, and therefore the cost of removing water to a distance by means of pipes is very trivial indeed." "The cost of transmitting water to a distance of five miles, and to a height of 200 feet, including wear and tear of pumping machinery, fuel, labour, interest of capital invested in pipes, reservoirs, engines, &c., amounts to about $2\frac{1}{2}d.$ per ton. The cost of cartage to the same distance and height will, under favorable circumstances, amount to $4s.$ per ton. The quantity of water annually consumed by one individual amounts to about 20 tons, and the refuse produced is generally estimated at about 1 ton; consequently 21 tons of liquid manure must be transported in place of 1 ton of solid manure; and hence it appears that the expenses of conveyance to a distance of five miles in the liquid and solid states would be almost precisely equal. The liquid manure would, however be available as an irrigant, and produce vastly greater effects than the solid manure, of which much of the most valuable components is dissipated in the atmosphere. In the neighbourhood of Edinburgh, where sewer-water is applied as a manure, four or more crops are yearly obtained. It is questionable whether the *deposited* manure would alone be of much value, inasmuch as the soluble salts would be retained by the water." The following calculation is both interesting and important. "On the system of constant supply, the quantity of water annually delivered to a town of 50,000 inhabitants, and for the most part returned by the sewers, is—50,000 inhabitants $\times$ 20 gallons $\times$ 365 days $=$ 365,000,000 gallons, and the water from steam-engines, of the aggregate power of 500 horses, would at most amount to—500 horses $\times$ 4 gallons $\times$ 60 minutes $\times$ 12 hours $\times$ 300 days $=$ 432,000,000 gallons, making a total of 797,000,000 gallons. Now this is only equal to the quantity of rain which falls in the course of a year upon 820 acres of land, and would amount to an average daily depth of the twelfth part of an inch upon that extent of surface. A town of the magnitude instanced requires much more than this quantity of land for the production of the various descriptions of fruit and vegetable crops, and reasoning upon the ascer-

tained advantages derived by the gardeners at Edinburgh from their very imperfect applications of sewer-water, would be greatly benefited by the contemplated arrangements, although obtained at an annual cost to the cultivators of the soil of perhaps £3 per acre for mains, works, and management, and £1 or £2 per acre for the distributory apparatus situated within the private grounds."

Another subject treated in the evidence of Mr. Hawksley, is the supply of warm baths by the waste water of steam-engines. It appears that both in London and Nottingham the waste water has been applied to this useful purpose. A 500-horse engine will suffice to supply no less than 26,000 baths daily, with water at a temperature of from 60° to 80° if taken from the waste pipe, and from 92° to 110° if taken from the hot well. If the waste water of a 500-horse engine were made to supply a public washhouse, it would more than suffice "to wash for a whole county." The use of contour lines and bench-marks in our large towns is also strongly insisted on by the witness, but as this subject is considered more at length in the evidence of other witnesses yet to be analysed, it will not require any further notice in this place.

At pp. 326 et seq. the reader will find some very judicious observations on the unnecessary expense of Acts of Parliament, the public burdens imposed by the authorization of competing companies, and the obstacles to improvements arising out of the party and political squabbles of local boards. Mr. Hawksley's evidence closes with the expression of an opinion that if adequate powers were given, and the fear of competition removed, a great amount of capital would be invested in water-supplies, and other analogous undertakings; but that the insecurity of the present mode of investment, from the danger of the introduction of competing companies, generally does interfere with the application of capital to those purposes.

Thomas Ashton, Esq., a manufacturer, at Hyde, near Manchester, gives us some brief, but important, information as to the economical and other advantages of proper supplies of water to the houses of the labouring class. He has introduced water into 320 labourers' houses, at an expense of £1 per tenement, and an annual payment to the water-company, for which jointly he receives 3*d.* per week. Before this was done the water had to be fetched from a distance, at great expenditure of labour, or the rain-water had to be collected in tubs which were constantly leaking. The wells, too, were a continual source of demoralization. The change has given the greatest satisfaction. Mr. Ashton says, "I know no alteration that has given so much; there is never any complaint in paying for the water. They say they save money by it; that the saving in cans and tubs, which were continually broken, would almost pay the expense." The following testimony as to the effects of this supply on their domestic habits is very important. "Their houses are much cleaner, especially their back yards. The tap is placed over the sink in the kitchen; it is always at hand, and occupies no space; and there is no stint in the use of the water." "Their condition has certainly been raised by an increased supply of water, more attention is paid to cleanliness, personal and household." The effect on the health "is very great indeed," and this they themselves admit. The following passage, too, is worth attention, from its bearing on the method of constant and uninterrupted supply at high pressure, so ably advocated by Mr. Hawksley. "On some occasions, when there was a long drought, the water was shut off by the manager for fear of its being all used before another supply came; but on such occasions of intermittent supply it is found that more water is used, than when it is on constantly. When it was let on occasionally, for fear of

inconvenience, they filled all their pans that they might not be straitened; they drew consequently twice as much as they used. When the water came in again they threw away the water that was unused, and took a fresh supply." After this conclusive evidence, there can be no difficulty in agreeing with Mr. Ashton, that "the regulation of the supply of water is undoubtedly a matter of national importance."

The valuable evidence of Mr. T. Ashton is followed by that of Joseph Toynbee, Esq., F.R.S., one of the surgeons to St. George's and St. James's dispensary. He directs attention to the influence of impure air as a cause of scrofulous affections, and insists very strongly on the importance of ventilation. After quoting a report published in the 'Journal of the Statistical Society' of the results of a house-to-house visitation, made at the instance of Lord Sandon, in the parish of St. George's, Hanover square, illustrative of the narrow accommodation provided for the poor, and the consequent over-crowding to which they are subject, he proceeds to give some striking examples which have come under his own notice. "I am now attending," he says, "one family, where the father is about 50, the mother about the same age, a grown-up son about 20, in a consumption, and a daughter about 17, who has a scrofulous affection of the jaw and throat, for which I am attending her, and a child; all sleep in the same bed, in a room where the father and three or four other men work during the day as tailors, and they frequently work there late at night with candles. I am also treating, at this present time, a woman with paralysis of the lower extremities, the wife of the assistant to a stable-keeper, whose eldest son, the son by a former wife, and a girl of 11 or 12 years of age, all sleep in the same bed. In another case which I am attending, in one room there are a man and his wife, a grown-up daughter, a boy of 16, and a girl of 13; the boy has scrofulous ulcers in the neck, the father, though only of the age of 49, suffers from extreme debility and a broken-down constitution." The following instance is too illustrative of a not uncommon practice among the poor to be omitted. "An aged Irishwoman applied to me with a broken rib; she declined going into an hospital; the dispensary, therefore, supplied her with a flannel roller, and I promised to visit her and apply it. On reaching her *home*, I found that it consisted of one corner of a room on the first floor of a house in Peter street, Golden square. The landlady of this room, who herself occupied the central part near the fire-place, had tenants in the other three corners, in one of which was a widow with three or four children. I applied the bandage to my patient, who went on, to use her own words, *very comfortably* for four or five days, at the end of which time I found her in considerable pain from the following cause: not being able to go out as usual with her basket to sell fruit and vegetables, she could not pay her daily rent, and therefore, on the suggestion of the landlady, consented to under-let half of her bed; but it happened, unfortunately, that the new tenant being bulky in person, occupied more than her fair proportion of the joint tenancy, so as to press against the broken rib of my poor invalid, and displace it." We shall not be surprised to hear that the atmosphere of these over-crowded dwellings is extremely close, and that, tainted by the emanations from drains and privies, it imparts a foul odour to the very clothes of the inmates. Ventilation, which is here so greatly needed, is impeded by the windows not opening above, and the air impure and unchanged, aided by want of personal cleanliness, badly-chosen and badly-cooked food, and defective clothing, becomes the cause of the scrofulous affections which abound in the district in question. In support of his opinion that scrofulous diseases are mainly to be attributed to impure air, Mr. Toynbee cites the authority of Baudelocque and Dr. Duncan of Liverpool;

the latter of whom supports this view by quotations from Professor Alison and Sir James Clark. He also attributes the mortality of the animals in the Zoological Gardens to scrofula, and that, in its turn, to impure air and defective ventilation. The scrofulous diseases attributed by the witness to impure air are inflamed eyes, diseases of the joints, several forms of skin disease, hydrocephalus, and (a disease to which Mr. Toynbee has given much attention) deafness. Deeply impressed with the importance of ventilation, Mr. Toynbee has endeavoured to carry it into effect by the use of window-ventilators consisting of plates of perforated zinc, aided in some instances by chimney-ventilators, inserted in the chimney near the ceiling, and consisting of a zinc plate let into a box of the same material, and furnished with a flap of oiled silk to act as a valve: a sketch of this ventilator is given at p. 337. The perforated zinc plate was suggested to the witness by Mr. Cottam, the engineer of Winsley street, Oxford street; the chimney-ventilator is the invention of Dr. Arnott. These ventilators have been brought into extensive use among the patients of St. George's and St. James's dispensary, and many striking instances are given of the comfort and benefit which they have conferred.

Of the excellent effects of improved ventilation effected by increased space on the health of children, Mr. Toynbee gives the following instance. "A charity-school in London contained 60 boys and 60 girls, the ages of whom were from 9 to 14 years. These children, together with their attendants, lived in an old and large house, the girls and female attendants sleeping on the second floor, and the boys on the attic floor. All the boys slept in one large room, having windows on each of two sides, and each boy had a separate bed. Scrofula in a greater or less degree always existed amongst these children. In the year 1825, a project, which for a long time had been entertained, was carried out, viz. the erection of a separate house for the boys, which consisted of five stories, each story consisting of one large and lofty room. The basement was the dining-room; the ground-floor the school; first floor wash and store-room; second and third floors being sleeping rooms; by this arrangement the 60 boys were divided, and 30 slept in each of the two rooms, which were large, well ventilated, and lofty. With this change in their sleeping apartments, &c., the boys took much more exercise in the open air. The result was that in a short time scrofula entirely disappeared from among the boys. Although the 60 girls, by the removal of the boys, gained a great deal of additional room, and although they walked out twice a week, yet among them (at the very period that the boys were getting well) scrofula was so prevalent, that the attendance of the consulting physician and surgeon was required in addition to the ordinary medical officer. The boys and girls were from the same class of the poor, and from the same localities; their food was quite alike; the girls did much laborious work as well as needlework; the boys did the domestic work of their own house, and were also employed in tailoring."

The difficulty placed in the way of ventilation by the defective cleansing and sewerage of the places occupied by the poor has not escaped the observation of Mr. Toynbee. So long as the introduction of ventilators into the doors and windows of the poor shall merely form a new entrance for the foul air of drains and cesspools, the poor will naturally prefer the closeness of their own apartments to the offensive odours from without. Nor is it to be wondered at that, under these circumstances, the poor should indulge in the bad habit of smoking, a practice which among the rich has no excuse, but which thus becomes among the poor a choice of evils.

The evils attendant upon the present defective mode of supplying water to

the houses of the poor is very ably stated in Mr. Toynbee's evidence. The pollution of the water in the water-butts, the intermittent supply, the labour of carrying it from the ground-floor to the upper rooms of the house, the impossibility of so doing in the case of weak and sickly women, the small quantity of water used for washing and cooking, the want of facilities for disposing of the dirty water, and the consequent neglect of cleanliness, are very ably set forth; and under these circumstances, no man of common sense can fail to partake of the wonder expressed by the witness, "that so many of the labouring classes crowd to the gin-shops, but that so many are to be found struggling to make their wretched abodes a home for their family."

The witness adds the weight of his testimony as to the possibility of greatly reducing the existing mortality by sanatory measures, the coincidence of early marriages with a depressed physical condition, of excessive mortality with excessive reproduction, and of an increase of selfishness and absence of natural feeling, keeping pace with a growing familiarity with death. Some tables are subjoined to which the reader is referred; they will be found at pp. 341-2.

But, perhaps the most important part of Mr. Toynbee's evidence still remains to be noticed, namely, that in which he shows the cost of sickness to the labouring class. The following cases ought to arrest our attention:— A policeman receiving 20*s.* a week regular wages, being remonstrated with as an unfit object for a charity, gives the following account of himself: "That he paid for his miserable one room, divided into two, 5*s.* a week; that he had 1*s.* 8*d.* weekly to pay for keeping up his clothes, which reduced the money he had for his family of four children and his wife to 13*s.* 4*d.*; that he had had all his children ill, and lost two; that he had during three years paid six doctors' bills, principally for medicine, at the rate of 2*s.* 6*d.* a bottle, amounting to between £30 and £40; that two of the children had died, the funerals of which, performed in the cheapest manner he could get them done, had cost him £7; the wife and his four children were now ill." The second case is that of "a porter, in regular employment, at wages producing £1 a week; he paid 3*s.* 6*d.* for a most miserable and unwholesome room, in which himself and six other people, four children, and three adults slept; the children were shoeless, extremely filthy, and badly clad; the wife ill in bed of a diseased knee, for which I attended her; two children had been still-born, and he had lost three others: the sickness of one of these children, which had died at 14, of consumption, had cost him, in doctor's bills, 16 guineas; the sickness of the one which died 11 months old, of water on the brain, had cost him £6; the third had died 14 days old. The expenses in the three cases had so impoverished him that he was compelled to apply to the parish for aid for their burial." Want of space alone prevents the insertion of one or two other cases, equally striking and convincing. The evidence concludes with a short summary of the facts gleaned by visiting 100 families. "At the time," says Mr. Toynbee, "I visited these 100 families, no less than 212 of the members were suffering under disease, manifest in various stages; they had already had no less than 251 deaths and funerals, and a corresponding amount of sickness. It was only in a late stage of my investigations that I began to see the very serious amount of miscarriages they have had, and which, in many instances, exceed the deaths. 350 of the members of these 100 families were dependent children, whose average age was little more than 10 years."

The medical evidence, of which an analysis has been already given, refers chiefly to typhus fever, and scrofulous affections, due, the former to defective drainage, the latter to defective ventilation. The evidence of Dr. Southwood

Smith, and the first part of Dr. Arnott's evidence, referred to the one, the remainder of Dr. Arnott's evidence and that of Mr. Toynbee to the other. The evidence of the next witness, the author of the present abstract, has reference chiefly to a subject which is only cursorily noticed by previous witnesses—pulmonary consumption—which is viewed in connexion with the condition of the workshops and houses of the labouring class.

The witness begins by stating, as the result of his inquiries, the following propositions :—1. Consumption is relatively more frequent in persons working in-doors than in those employed out of doors. 2. In those employed within doors, it is most frequent in men using little exertion. 3. It makes its attack earlier where it is of most frequent occurrence. 4. It is very common in the intemperate, and in those exposed to the inhalation of dust. 5. It is more frequent in men than women, at least in the metropolis. To these propositions the two following are added : 1. That the proportion of consumptive cases in the three classes of gentlemen (including professional men), tradesmen, and artisans (including all classes of labouring men), are respectively 1 to 5, 1 to 2·60, and 1 to 2·39 ; or about 16, 28, and 30, respectively in the 100. 2. That the average age of death from consumption is earlier in the last two classes than in the first ; but the artisan who dies of consumption dies at a somewhat later age than the tradesman. This greater liability to consumption of the tradesman and artisan is attributed to the unwholesome state of the shops of the former, and the workshops of such of the latter as work within doors ; the unhealthy residences, both of the petty tradesmen and of the in-door and out-door labourers, contributing to the same result. This unwholesome state of shops, workshops, and houses, arises from defective ventilation, which proves most fatal when accompanied by long hours of work.

A curious fact in confirmation of this statement is the intermediate position which the tradesman holds in respect of consumption, and the age at which it proves fatal, between the in-door and out-door labourer, on the one hand, and the sedentary and non-sedentary class of in-door labourers, on the other. Thus, while the deaths from consumption under 30 years of age, among tradesmen, are 33 per cent., of the total deaths from that disease they are 37½ per cent. among those working in-doors, and 25 per cent. among those working out of doors ; 44 per cent. in men following sedentary occupations, and 31½ per cent. in those using great exertions in their in-door employment.

It appears, therefore, "that men who follow their employments out of doors, though exposed to all the inclemencies of the weather, are less subject to consumption, and that when they die of it, they die at a later age than men who work in-doors, and are protected from the weather." That "both men and women who follow their employments out of doors, possess this advantage ; and it is not the labourer only who is comparatively exempt, but even the hawker who stands about in the streets and markets, and who probably uses little more exertion than the majority of those who work within doors. It is not, therefore, to exercise, but to the open air that they owe this advantage." The witness proceeds to confirm this view of the ill effects of defective ventilation on the health of men following sedentary occupations within doors, by the following reasonings. "The in-door labourers, as a class, have higher wages, and can consequently command better food, clothing, and lodging, than those who work out of doors. In this respect then they are more favorably circumstanced ; their habits of life, too, are nearly the same, and it is probable (at last I have been led to form that opinion) that the out-door labourers, as a class, are more addicted to intemperance. There are only two things then, in which the two classes differ. A considerable proportion

of those employed within doors lead a sedentary life, and the whole of them breathe an air less pure than the out-door labourers. Now it is an acknowledged fact, that among literary and professional men, sedentary pursuits do not shorten life. Hence there remains but one cause to which to attribute the greater liability of the in-door labourer to consumption."

But, though the quality of the air inspired, and not the amount of exertion, is the cause of the difference between those who work in-doors, and those who work out of doors, it does not follow that exercise has no influence on health. On the contrary, it is shown that sedentary occupations, as compared with those requiring stronger exertion, are decidedly injurious to health, by comparing two classes of persons working in the offices of the letter-press printers. "I have made," he says, "very precise comparisons between the pressmen and the compositors, of whom the former use strong exertion in their employment, while the latter make many small movements of the hands and arms. Their rooms are generally warmed and lighted in the same way, and they both have but little space to work in, though the pressmen require more room. The comparison is greatly to the disadvantage of the compositor, who is extremely liable to consumption, and at a comparatively early period of life. This is the more striking, as the pressman is notoriously more given to habits of intoxication than the compositor." But here, as in most things, there is a principle of compensation at work; for it appears that men who use strong exertion are liable to some diseases from which those following the more sedentary occupations are free. Towards 50 years of age, men who labour hard begin to suffer from hard work, and they become very liable to diseases of the air-passages of the lungs, and to some diseases of the heart." This fact accounts for the greater number of very old men found among those following sedentary occupations. The few that can bear the unwholesome influences to which they are exposed, having reached that time of life when hard labour is injurious, still continue to enjoy the health of which such hard labour deprives other men.

The witness goes on to state, that he believes deficient ventilation to be more fatal than all other causes of consumption put together; but that habits of intemperance hold the next rank, and, after them, every cause which tends to debilitate the frame. Thus consumption is very frequent among the dissipated of both sexes.

The next point which seems to deserve notice is an estimate which the witness gives of the number of cases of pulmonary consumption occurring in England and Wales. Of the 60,000 cases entered under the title consumption, in the returns of the Registrar-General, he believes only 36,000 to be cases of true pulmonary consumption, out of which number a very careful calculation, founded upon the number of deaths from consumption occurring in the different classes, has led him to estimate that 5000 adults might be saved, the annual sacrifice of life in the metropolis being about half that number, and the remaining half occurring among the labouring classes of 20 of the largest towns of England. The tradesmen, among whom, as has been stated, pulmonary consumption is very rife, are altogether excluded from this estimate, and it is assumed that the waste of human life occurs only in London and the larger provincial towns. If the tradesmen and the whole of England were comprised in this estimate, there can be little doubt that the number of deaths from consumption would amount to upwards of 6000, or one sixth of the whole. One sixth of all the deaths is attributed by the witness solely to the deficient ventilation of workshops, and the remainder to the unwholesome condition of the dwellings of the poor, and principally to deficient ventilation. The opinion that consumption is a na-

tional disease is treated as a vulgar error, and the existing liability to consumption is traced not to climate, but to the large proportion of the population engaged in manufactures, and especially in sedentary occupations.

The witness next details the results of his personal inspection of the workshops of the metropolis, especially of the printing-offices. "I have found," he says, "the ventilation of workshops very imperfect, even where the building was expressly designed for the purpose to which it is applied. As far as I have had an opportunity of observing, the history of a London workshop is this :—A man begins by employing a few hands in a house often but ill-adapted for an ordinary dwelling-house, and, as his business increases, he contrives to add one low apartment to another, by knocking down partition-walls, and making such alterations as suit his immediate purpose. He contrives by this means to accommodate an increasing number of men, and the only practicable limit to that number is the want of more standing or sitting room, as the case may be. He warms these rooms by a stove, by steam, or by hot air, and lights them with gas; the consequence is, that the workmen are exposed at the same time to a high temperature, and a foul and stagnant atmosphere. This combination is carried to its highest degree in tailors' workshops, and I have been told more than once by the journeymen tailors themselves, that they have been obliged to strip to the very skin, that they might be able to bear the intense heat to which they are exposed. In buildings intended for workshops more space is given to the men, but they are usually constructed on very bad principles; the whole building often forms one space, divided by floors, perforated by a common staircase; if a steam-engine is employed, it is generally to be found in a lower apartment of the building, so that the heat rises from this into the upper rooms, and mingling with the foul air of the intermediate floors, ascends to the highest flat, where the hot and foul air collects in great abundance."

The evidence proceeds to detail the results of a series of comparisons between the state of health of letter-press printers working in rooms similarly lighted and heated, and in which ventilation was equally neglected, the only difference being in the quantity of impure air which the several men had to breathe, this quantity being ascertained by actual measurement of the rooms themselves. Of these comparisons the following is the most striking and conclusive. Among 104 men having less than 500 cubic feet of air to breathe, there were 13 who had spit blood, 13 who were subject to habitual catarrh, and 18 to other diseases, making a total of 44 invalids; of 105 men who had from 500 to 600 cubic feet of air to breathe, 5 had spit blood, 4 were subject to colds, and 23 to other diseases, making in all 32 invalids; while out of 100 men having more than 600 cubic feet of air to breathe, 4 only had suffered from spitting of blood, 2 from catarrh, and 18 from other diseases, making a total of 24 invalids. The disparity between the several groups is so considerable, that it is scarcely necessary to give the per-centage proportions which are embodied in a table.

The appearance of the men who work in these unwholesome rooms corresponds with the results of the comparisons just stated, and there are comparatively few old men among the workmen; the greatest age observed by the witness among the compositors was 72.

After proving the beneficial influence of exercise in lessening the effect of foul air on the system, the heated and impure atmosphere of workshops, and a similarly unwholesome state of the dwellings of the poor, are charged with the production of a large number of diseases, of scrofula, pneumonia, infantile fever, and mesenteric disease.

In speaking of intemperance, its causes and effects, the witness states that, as a general rule, men who work out of doors drink more than those employed within doors; but he adds his belief that the unwholesome state of places of work, by the depressing effect it produces, is a great cause of intemperance. An exact comparison is also instituted between the classes most exposed to the temptation of drinking and their more sober neighbours; the drayman, for instance, with the labourer, the potboy with the footman, and the licensed victualler with other tradesmen. All these comparisons are very unfavorable to the classes most exposed to the temptation of drinking. Thus, before 35 years of age, more than twice as many draymen die as labourers; and before the same period, the deaths among potboys exceed those of footmen by more than one third.

On the subject of ventilation, of which the first part of the evidence demonstrates the importance, the witness states that the working classes are, to some extent, alive to the injury they sustain by the unwholesome state of their places of work; but that "the evil remains unredressed, for the simple reason that all the attempts made to introduce fresh air occasion draughts, so that no sooner is an opening made than the men who are working near it stop it up. The men cannot bear cold air, and are much more afraid of draughts than they are of the poisonous atmosphere which, by enfeebling them, makes them so sensible of cold."

The witness confirms the testimony of Mr. Toynbee as to the great comfort and advantage attending the introduction of the perforated zinc plate into the windows of the houses of the poor, and into workshops, in spite of the draught, which it only somewhat modifies. The evidence, after glancing at the existing indifference to health and life on the part both of the employers and employed, and stating a striking instance of the great benefit to be derived by simple and cheap means of carrying off irritating gases, concludes with a brief summary.

The next witness, in order, is Strethill O'Foden, esq., an architect, who has been engaged in superintending the building of workhouses and other edifices for the labouring class. He confirms the evidence of former witnesses as to the economy of the water-closet when compared with the cesspool, and he illustrates some of the cheapest forms of soil-pan and water-closet by drawings. The weekly expense to a tenant of an efficient water-closet and ample supply of water would be 2½d., or about half the expense of the cesspool alone. it is gratifying to find that the use of the water-closet is increasing and gaining ground, even in the inferior class of dwellings. An interesting and valuable fact, illustrative of the application of the refuse of towns to the purposes of agriculture, is stated in the following terms: "In the case of the Union workhouses at Rye and Aylesbury, soil-pans were fixed at the instance of Mr. Parker, the Assistant-Commissioner. When the situations have been favorable, as at Rye, for giving a rapid fall to the drain, I placed a large covered tank, or cesspool, at some distance from the building; the tank was formed for the preservation of the refuse, and its application to agricultural purposes as liquid manure. It would be pumped into water-carts, and in that mode distributed as liquid manure. In one instance of some land manured by the liquid manure supplied by water-carts, the produce of the land was stated to have been doubled." In respect to party-walls for the dwellings of the poor, Mr. Foden expresses his opinion that they are unnecessary, and states that they occupy the space usually allowed for a bed, and that the interest of their prime cost would cover the insurance of the houses. He, therefore, recommends their disuse. On the subject of legislative enactments he has the following sensible remarks:—"I think that legislation should be confined to the securing house-

drainage and cleansing, and supplies of water at a cheap rate. These are objects of paramount importance, and they cannot be accomplished by individuals. Something might, I think, be done by legislation to secure better ventilation without increasing expense. It is also, I think, possible to ensure due provision for external ventilation with respect to the width of courts and streets; but everything that does not diminish rather than increase some existing expense I think pernicious." It is the happy property of all the great sanatory improvements recommended by the several witnesses, and sanctioned by the Commission, that they do most materially diminish the expense occasioned by the existing defective arrangements.

The valuable evidence of John Liddle, esq., who, as medical officer of the Whitechapel Union, has enjoyed favorable opportunities for becoming acquainted with the condition of the poor of the eastern parts of London, follows next in order. It opens with the statement that the average age at death of artisans, is not more than 25 years, and that about one-half of their children die before 10 years of age. The poorer classes are very badly lodged. There is rarely more than one room to a family, and that room often subdivided. Each room is tenanted by about five persons, and the average quantity of air to each person is about 153 cubic feet, or about one fourth of the quantity usually stated to be necessary to health. In many of the garrets it is impossible to stand upright; the staircases are dark and offensive, and the rooms themselves foul from over-crowding, joined to the odour of cesspools, dirty water, and dirty clothes; few of the houses have water laid on in the yards, and they are commonly supplied from a tap or stand-cock. The consequence of this absence of water is, that their clothes, instead of being washed, are passed through dirty water, and the smell of their so-called *clean* linen is most offensive.

The over-crowding which previously existed has, here as elsewhere, been increased by metropolitan improvements; some of the larger houses are now converted into lodging-houses, which, for the most part, are shamefully over-crowded; and the houses in many places in the district are more densely inhabited.

The following facts are far too interesting and suggestive to be omitted.

"In a place in Cartwright street, where there are a number of small tenements surrounding a piece of waste ground, which tenements are occupied entirely by the labouring classes, a well has been sunk by the landlord, and a large tank erected over the well.. This tank is filled by horse-power. From this tank, pipes are carried and the water is distributed into the several houses. The water is turned on three times a week from the tank. Some of the houses have a water-butt in the cellar, and separate conveniences. . . . . I may mention, as evidence of their appreciation of the supply, that they now pay 3*s*. 6*d*. per week as rent in lieu of 2*s*. per tenement, which they formerly paid. It appears that these houses were for many years in the opinion of the landlord underlet, but the tenants consider that the increase of the rent arises from the supply of water."

"Windmill court, in Rosemary lane, was one of the most unhealthy in my district. It was unpaved and filthy, and with stagnant water before the houses. I used to visit it sometimes two or three times a-day for fever cases. About twelve months ago it was flagged; it was well supplied with water from a large cast-iron tank, which enables the inhabitants to have a constant supply, instead of an intermittent one, on three days a-week. The court is regularly washed down twice a-week, and the drains are so laid that the water passes through the privy, and carries off all the soil, which was formerly a most foul nuisance, and a constant expense to the landlord. In

the seven months ending March, 1843, I attended forty-one new cases of sickness in that court; in the last four or five months, I have had but two cases." Mr. Liddle adds, "The rent is better paid, and the landlord is considered to have made a good thing of the improvements, which are executed at his own expense. There is no doubt that sickness is the most common cause of the inability to pay the rent."

Mr. Liddle's evidence concludes with a fact of more immediate interest to medical men, showing separately the great advantages of sewerage, ventilation, and increased accommodation. "The London Hospital was badly drained, heated with hot air, and not large enough for its inmates. In 1837 and 1838 respectively, the mortality was 14 and 12½ per cent. In 1839 the sewerage was completed, and the mortality fell to 9½ per cent. In 1840 the hot air was discontinued, and a further decrease to 9 per cent. took place. The mortality in 1841 was 10 per cent. In 1842 the new wing was opened, when the mortality fell to 8 per cent., and in 1843 to 7 per cent."

William Chadwell Mylne, esq., C.E., son of the architect of Blackfriars Bridge, and the engineer of the New River Waterworks, the next witness examined, opens his evidence with a short historical account of the supply of water to London, to which the reader must be referred. It is a march of economy as well as efficiency; but it has not yet arrived at the perfection of which it is susceptible. The reader may also be referred to a sketch illustrative of the intimate interlacement of water and gas pipes springing out of the system of competition so unhappily permitted and encouraged, to the great injury and expense of the public. Some interesting statements will also be found in reference to the frequent escape of gas into the water-pipes and sewers, giving rise to dangerous explosions. On the important question of water-closet versus cesspool, Mr. Mylne has an observation worth citing. "It is indisputable that water is the best and cheapest means of removing all decomposing matters. Nothing improves the habits so much, nothing civilizes a population so much, as improvements in the modes of removing the excreta. I know scarcely anything so demoralizing and degrading as the common privies to various courts in town, and to clusters of cottages in villages. For this reason, wherever I could recommend it to be done, I have abolished them; and I conceive that there should not only be separate accommodation for each house, but, when possible, separate accommodation for males and females of all classes."

On the ventilation of the sewers the witness states his practical opinion of the use of high vertical shafts. He has employed them, and finds them answer well. It may be here observed, however, that with a proper supply of water, a due fall, and a reasonable construction of our sewers, no ventilation would be required, as the recent sewage flowing uninterruptedly through the sewers, though impregnated with an animal odour, is free from any offensive or injurious gas. In answer to a question by the Commission, Mr. Mylne expresses his belief that the river Lea, by the removal of obstructions, and the improvements of the navigation, may be made to yield as large a quantity of water as will be required by a more perfect system of supply. As the adoption of the system of constant supply, at high pressure, will, in all probability, be rendered imperative, it is fortunate that a not very expensive modification of plan would enable the existing water companies to meet the expected requirements of a sound sanatory measure.

Captain Vetch, R.E., the next witness, was first examined as to the scale and description of survey most eligible for house and street drainage and sewerage, and for the regulation of new buildings. A scale of five feet to the mile is that which he recommends. It is that adopted in the Ordnance plans of

Dublin and Windsor. On this plan the witness proposes to mark the *cropping out lines* of the different strata, the water-shed lines, and contour lines, or lines of equal altitude at every three or four feet of elevation. The nature and value of these latter lines will be presently explained. The economy which they effect may be judged of from the statement that "the expense of the Ordnance level and contours would be saved in three years, in the mere employment of surveyors!" and this would be only a part of the economy of time and money to which they would lead. The cost for Leeds is estimated at $2\frac{1}{4}d.$ per house.

On the subject of the application of the refuse of towns to the purposes of agriculture, Captain Vetch enters into some instructive details and estimates. For the town of Leeds he proposed a plan for collecting and distributing the contents of the sewers, which consisted in forming two main drains, one on each side of the river, to collect all the interior drainage, and convey it to a distance below the town; these main sewers to be so contrived as to permit all surplus and flood-waters to be discharged into the river considerably below the town; while, at other times, the solid deposits were collected in covered catch-pits, and the liquid manure raised by steam power, and applied to the purposes of irrigation. The estimated cost and profit of the works connected with the distribution of the liquid refuse of 80,000 inhabitants living on the north side of the river is as follows:—Cost of steam-engine, tanks, pumps, &c., 8000*l*; annual expense, 550*l*., or, throwing them with contingencies into an annual charge, a sum of less than 1000*l*. On the other hand, assuming the sewage water from 80,000 inhabitants to be applied to 1000 acres of land, being at the rate of 80 to one acre, the witness expects that after the lapse of some years an additional value of 10*l*. an acre will have been conferred upon the soil; which would yield, after deducting the above annual expense of 1000*l*., a clear profit of 9000*l*. As a proximate and general estimate, the annual charge is put at one eighth of the net produce. No calculation is made of the pecuniary profit which would result from such an undertaking, but from the foregoing statement it is clear that it must be considerable. After alluding to the well-known case of Edinburgh, and the excellent effect of irrigation on wheat lands in New Spain, Capt. Vetch gives it as his opinion that the irrigation with sewer-water will prove most valuable to the grass lands in the neighbourhood of large towns, but that if the liquid manure from them is entirely saved for the purposes of agriculture, there will be a surplus for grain crops; and he concludes, from analogy, that the stimulus and material of liquid manure would produce effects resembling irrigation with pure water, in warm climates.

In affixing a money value to the human excreta, Capt. Vetch seems to have exercised great caution, and to have put forward estimates which cannot be charged with extravagance. He says, "Some agricultural chemists have estimated the value of the liquid excretum of each person per annum for manure at 12*s*. (the estimated value in Flanders of the liquid and solid excreta is 1*l*. 17*s*.) "and if the whole refuse of a town, soluble and conveyable by water, could be completely conveyed to the purposes of the land, to the value above-estimated might reasonably be added half as much more, giving a total of 18*s*. per head. Leaving, however, such high estimates, as not likely to gain credit, however true they may be, few persons who have attended to the subject would hesitate to admit that 5*s*. per head would be a low estimate for the sewage of a large town. Five shillings a head on 80,000 persons would produce £20,000, and deducting one eighth for expenses, leaves £17,500 as revenue." From want of space, it will not be possible to enter farther into this subject; the following quotation, therefore, must suffice to complete this short notice of

Captain Vetch's evidence. Speaking of the drainage of large towns, he says, "I conceive that the aim of a good system of sewage is to get rid of every cesspool and every partial deposit of filth, and to send the whole by the speediest course through the main sewer into the country; and that not a particle of such matter should be lost or wasted, except in times of floods from heavy rains, when the diluted matter would become too voluminous to be all retained for agricultural purposes; but on such occasions the surplusage would pass off from the main sewer at the point of discharge provided for the circumstance."

The evidence of the next witness, Captain Dawson, R. E., is chiefly interesting from the appended plans of the town of Preston, illustrative of different scales of survey, and of the modes of working, by which the character of the several areas, and the way in which they are occupied, may be made obvious to the eye at a glance. To these plans, therefore, the reader must be referred.

The next evidence, that of Butler Williams, esq., C. E., is much taken up with the importance of proper surveys with the contour lines and bench marks, indicating the altitude of the several parts of large towns. On account of the great importance of this subject, and the clearness of the explanation given of it by the witness, the following passage is quoted at length:—"So early as 1742 an Essay, proposing the adoption of contour lines on maps, was read before the French Academy of Sciences, the idea having been suggested to its author by the traces left by a great inundation which occurred two years before. To give an idea of the principle of contour lines, we may suppose a hill, or any elevation of land covered with water, and that we want to trace the course of all the levels at every four feet of vertical height; suppose the water to subside four feet at a time, and at each subsidence the line of the water's edge is marked on the hill; when all the water is withdrawn, supposing the hill to be twenty-four feet high, it will be marked with a set of six lines denoting the contours of each of the levels, exactly four feet above each other. The marks thus supposed to be left on the hill being surveyed, and drawn on the plan, would supply information more exact than a model in relief. For when the heights are to be referred to on the mode they must be remeasured with chances of mechanical error greater than those presented by the plan. The plan with the contour lines gives, by inspection, the recorded heights as obtained from *direct measurement in the field*, whereas the model gives them only when deduced by a *secondary process* from measurements on the diminished scale. The want of accurate outline maps prevented the idea from being carried out at the early period referred to; but from time to time the subject was reconsidered, and after having been used in special cases, chiefly for surveys, having reference to the supply of water, the contour lines were adopted on the French Cadastre, in 1818, as a part of the general operations of the survey. Contour lines have also been adopted for the Irish survey since the year 1838." Such is a lucid history and description of a plan for ascertaining, tracing, and permanently recording the varying elevations of our towns, so as for every species of engineering work required for sanitary purposes to have a survey always ready at hand, thereby saving the vast recurrent expenses now rendered necessary by the separate surveys required for each separate work. For a more complete understanding of this subject, and its applications, it will be necessary to consult the original evidence with its illustrative engravings.

The next subject discussed in the evidence of Mr. Butler Williams is the proper shape of sewers. It is unnecessary to state that he completely coincides with former witnesses as to the superiority, both in strength and economy, of the egg-shaped sewer; and he shows that, by adopting the faulty

and costly form with upright sides, the Westminster Commission of Sewers have wasted £1660 3*s*. 3*d*. on every mile of large-sized sewer which they have constructed. If the total length of sewers constructed during the last 10 years be taken at 40 miles, the loss to the public will be no less than £66,669 15*s*. A quarter of a million of money, at least, has been thus thrown away in the metropolis, in the same period of time. An interesting account is given by the witness, of Sir Christopher Wren's proposals for rebuilding London after the great fire, and he enters into ingenious calculations to show the pecuniary injury which has been inflicted by the existing steep thoroughfares which that plan would have abolished or modified. From these calculations it appears that the loss incurred in the carriage traffic of Holborn and Ludgate hill amounts to about £100,000 a year. For the particulars of this calculation, and for other matters of interest, the reader must be referred to the evidence itself.

The evidence of Mr. Joseph Quick, engineer of the Southwark Water Company, relates chiefly to the supply of water to the metropolis. The pollution of well-water in consequence of defective drainage, the use of iron for service pipes, the injurious effect on health of water conveyed through lead pipes, the best method of filtration, the use of water for agricultural purposes, and for washing buildings,—these subjects are briefly treated. In reference to the important question—How are the water companies to be dealt with in any legislative measure for securing the health of the metropolis? Mr. Quick takes the only practicable and truly economical course. The resumption of all the privileges granted, with full compensation to paid officers and shareholders, is pronounced to be the best practical course. "The public would gain much, and would be enabled to compensate all interested parties liberally. Everything might then go on easily without the obstructions of making bargains and settling conflicts at every step, or attending to any other than the public interest. There might be at once an immediate saving to the public of the greatest part of the expense of collection." That there would be very little outlay required for some time to come for fresh mains may be inferred from the fact stated by the witness, that in the Southwark district, in some streets, there are as many as three sets of pipes. The system of competition has worked badly, and has increased the cost to the public, while it has returned but a poor interest to the shareholders.

Mr. Roe, C. E., in his re-examination, makes some valuable additions to his evidence. He proves that the system of flushing, so successfully adopted in the Holborn and Finsbury Commission, is no novelty, but that it has been in use at Eton since the very foundation of the College. He says, "In respect of Eton, I would mention, that the College is provided with sewers, constructed at the time of the foundation being formed, and the person who laid them out, 400 years ago, provided reservoirs and sluices for the purpose of flushing them with water; and those sewers have been kept free from deposit by periodical flushings ever since." The witness also bears his testimony to the safety with which soil pipes of small diameter may be introduced into our houses, and mentions one instance of an iron pipe, *three* inches in diameter, put into a sewer 50 feet distance from the house, about 11 years ago, and having a fall of about an inch in 10 feet, which has never been obstructed. The witness has also some observations on the subject of applying the sewer-water to the purposes of irrigation; he recommended the adoption of this course at Eton, and says, that at Derby he strongly recommended that it should be applied, and that, in his opinion, if the sewer-water were properly applied there, it would pay the expenses of the sanatory improvement of the town. After adverting to the well-known case of Edin-

burgh, he incidentally illustrates the value of the refuse of towns by stating, that the contractor for the soil from privies and cesspools in Paris pays to the Municipality the sum of £22,000, for the right to use it for the present year. Mr. Roe's Report to the authorities of Derby, on the subject of the application of the sewer-water of their town, is worth consulting. It will be found at p. 407.

Dr. C. J. B. Aldis, physician to the London, Farringdon, and Surrey Dispensaries, gives some valuable evidence relative to the condition of the poor in Bethnal Green and Spitalfields, in the neighbourhood of Snow hill, and in the borough of Southwark. He describes the condition of the habitations of the poor as very unwholesome. "Generally, one badly-conditioned room occupied by a whole family, badly ventilated and filthy." "Within the room close offensive smells, the atmosphere quite vitiated, the foul smell of the cesspool often distinguished; the courts uncleansed and in a dirty condition." Field lane, the courts leading out of Smithfield, Fetter lane, and Fleet street; and the Mint, Artillery passage, Bell lane, and Petticoat lane on the Surrey side of the water, are particularly specified.

The following extracts will convey a just idea of the condition of some of the worst of the districts just mentioned. "At the back of Ray street, Clerkenwell, which is densely populated, a most offensive and open drain, a part of Fleet Ditch, passes by the back of the houses, and takes its course parallel with Great Saffron hill, running under West street, where it disappears. The evils from this open sewer are of course most felt in summer, when the stench is intolerable. I have witnessed similar nuisances in Lock's Fields, Bermondsey, and Rotherhithe. In many places the refuse water, which has been employed for the purpose of cooking and cleansing the houses, flows through gulley-holes into the kennel in the street, where it frequently remains stationary, producing in warm weather the most offensive exhalations. Old Nichol street, with some streets in its vicinity, situated in the district of the London Dispensary, is very offensive in warm weather, in consequence of the exhalations from stagnant water. I am called upon to visit more cases of fever there than in any other part of the district. In regard to the water supplies, they are little calculated to add either to the comfort or health of the poor. In many courts there is only one supply of water for all its inhabitants, and it occupies a good deal of time to procure it and convey it back to the different rooms, where it soon becomes covered with a black scum. There is generally a filthy accumulation on the surface of the water in the water-butts. In some courts there is no supply of water; such is the case in Ireland court and Lusigneas buildings, Red Lion street, Spitalfields, which I visited to-day. One woman informed me that her husband lay dead, and that she could not obtain water without the greatest difficulty to wash his 'rags.' I went into her room, and found her husband lying dead in a coffin; the room was small, dark, and dirty, and occupied by six children, in addition to the father and mother. Another female represented the place to be 'stinking alive' for the want of water. In the neighbourhood of Field lane, some persons have not even cesspools or privies; all their excrements are thrown into a little back-yard, where they are allowed to accumulate for months together; others have a cesspool, but it is not provided with a drain, so that the excrements run into courts or streets, where they remain until a shower of rain washes them into the gutter. These are the places we are called upon most frequently to visit."

"The courts in Field lane are low and ill-ventilated, leading to back-yards and houses. The yards are strewed with decayed vegetables, dust heaps, dung, human excrements, and other putrescent substances. In one yard I have no-

ticed some pigs. I find the eesspools imperfectly covered, and the privies in a most filthy condition." "Red Lion court, Saffron hill, is quite unfit for human beings to dwell in; the houses are in a most dilapidated and dirty state. The privies and back-yards are exceedingly disgusting, the former being filthy and out of repair, and both emitting a most horrible stench. One yard, espeeially pointed out to me, was filled with a mass of putridity. There are no privies to some of the houses. Other sourees of unhealthiness may arise from the knaekers' yards, in one of whieh I was informed that sixty horses were slaughtered weekly. Different kinds of animals are skinned here, and the bones boiled, which oecasion a sickening smell, and heaps of bones may be seen in the yard, the washings of which, with the offal from the animals, are thrown into the Fleet ditch.' The moral effects of the overcrowding which takes place in these negleeted districts are painfully suggested by the following statement. "Sometimes I have found grown-up young men sleeping in the same bed with a middle-aged or young mother, brothers and sisters above the age of puberty lying in the same bed. In one case of melancholia in a young woman, which ended in insanity, she described the cause as arising from an incestuous intercourse with her brother. But the moral effeets only eome to our knowledge accidentally."

The same evils exist in the lodging-houses. "The sexes are not properly separated in the lodging-houses, for single males and females sleep in the same room, in beds about six inches apart. The lodging-house keepers profess to make a distinction between the "married" and "single rooms," whieh no doubt is generally maintained, but not always. I happened to be in one of these lodging-houses in Keate court the other day, and was shown into the "married room," where I observed five beds; the room was small, and four of the beds were large enough to contain two persons in eaeh. The landlord told me that the fifth bed was oecupied by a single female. Eaeh lodger pays threepenee a-night for the bed, and if two individuals, male and female, enter the house together, no question is asked as to their being married, aud they sleep in the same bed."

Dr. Aldis is of opinion that a very large diminution of siekness and mortality of the poor may without doubt be madc; such a diminution as has been madc in the sickness and mortality formerly prevalent amongst the higher and middle classes, apparently by the improved condition of their dwellings and streets. Many of the districts I have had to visit are apparently as filthy as the whole of London was described to have been at the time of the plague. I have stated that the smallpox has fallen like a plague on some of the worst-conditioned spots. The crowding of the habitations is apparently inereasing. I am informed that the alterations now making in St. Giles's have eontributed to the overerowding a part of Westminster and Drury lane; this I am informed by a pupil who lives close to St. Giles's. The epidemies, continued fever, and even smallpox, are inereasing, and I imagine that no one will venture to deny that conditions of the atmosphere may oecur which might produce in these districts a dreadful mortality. I may mention that I have become so much impressed with the importance of ventilation, that I have proposed to some of the committee of the Surrey Dispensary the application of the ventilators used by Mr. Toynbee as one of the most important charities that can be promoted in the overcrowded neighbourhoods."

The evidence of Dr. Rigby, physician to the General Lying-in Hospital, York road, Lambeth, is very interesting, and conclusive as to the importance both of drainage and ventilation. Puerperal fever is shown in the clearest manner to have been connected with neglect of these important measures, and to have been removed by their enforcement. The length to whieh this

analysis has extended prevents us from giving full extracts from this interesting and convincing evidence. For the same reason, it will be necessary to notice very briefly his statements as to the defective drainage and ventilation of private houses, and especially of bed-rooms, among which he especially notices the sleeping-rooms of servants. Such defects exist both in old and new houses, and give rise to much sickness, both of the heads of families and of servants. One instance must suffice. "I am at this moment," says Dr. Rigby, "attending a lady in her confinement (in the Marylebone District), whom I have with some difficulty rescued from an attack of puerperal fever, which threatened to assume the malignant form. On being summoned to her when in labour, I was struck with the offensive drain-effluvia, which not only pervaded the lower parts of the house, but rose perceptibly from the area as I stood at the hall-door; and I cannot help attributing this attack coming on, under all the possible circumstances of wealth and station, to the deleterious influence to which I have just alluded."

Dr. Rigby is the last of the medical witnesses who reside in the metropolis, and have given evidence relating chiefly to the health of its inhabitants.

The length to which the present abstract has extended renders it impossible, consistently with the limits of this work, to analyse the remaining evidence referring to the condition of the metropolis. Mr. Austin's additional evidence, on the defective structural arrangement of the metropolis, the disastrous effect on the poor of the so-called metropolitan improvements, and on other topics of interest, can be merely referred to. Much valuable matter might also have been extracted from the evidence of Mr. James Dean, illustrative of the value of the refuse of towns, and the serious obstacles opposed to sanatory improvement by vested rights of little value; and from that of Mr. W. E. Hickson on the subject of the window duties, and the possibility of a readjustment of them, by which a liberal supply of air and light might be made to consist with the maintenance of the existing revenue.

It is believed that the most material points relative to the sanatory state of the metropolis, as a not unfavorable specimen of a large English city, are brought out in the course of this analysis. The leading diseases of large towns, their causes and remedies, have been pointed out; and the imperfect nature of existing arrangements for preserving the public health clearly demonstrated. The pecuniary loss entailed by unnecessary disease and premature death, and the saving effected by improved structural arrangements, have also been shown. The other volumes of the evidence contain much valuable matter, to which reference may be made in future abstracts, which, however, will be devoted chiefly to the current literature relating to Public Health. This is a subject to which every new inquiry gives additional importance, and which will not lose its attraction for the medical man by being associated, as it will probably soon be, with his highest practical duties.

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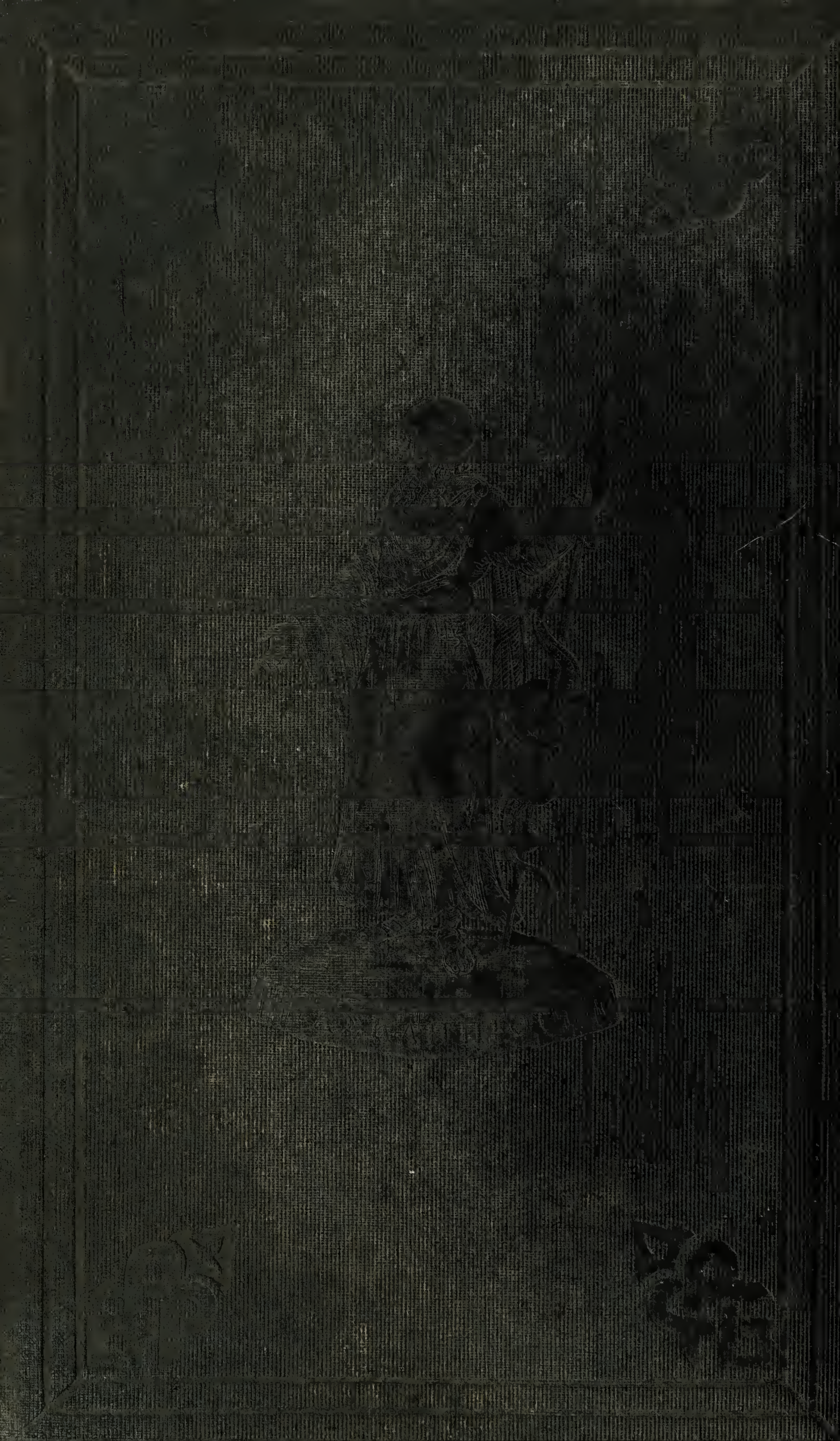
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